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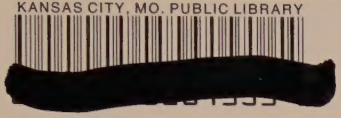

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FOUNDATIONS OF INDUSTRIAL EDUCATION

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BY

F. THEODORE STRUCK, PH.D.

Head of the Department of Industrial Education
Pennsylvania State College

NEW YORK
JOHN WILEY & SONS, INC.
LONDON : CHAPMAN & HALL, LIMITED
1930

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AUTHOR'S PREFACE

This book represents the writer's effort to present, in a not too technical form, material that has been prepared as a foundation and orientation course in industrial education. It is believed that present practice and future trends in industrial education can best be understood by comparing what has taken place in the past with what is now being done. With that thought as a basis a limited amount of historical illumination has been introduced and developments have been shown from the pre-factory period to the present time.

It is the author's hope that this book may serve as a textbook in industrial teacher-training classes given on a pre-employment basis and also in classes for teachers in service who wish an introductory, background and orientation course as a result of which they expect to become familiar, to a certain extent, with the underlying philosophy, the basic principles, the prevailing practices, the accepted terminology and recognized standards in trade and industrial education. It is also hoped that the book may find a similar use for supervisory and administrative officers in the field of general education, and for laymen who wish to get an appreciative understanding of industrial education.

The contents of the book have been arranged with a view toward the flexibility that is necessary under the varying teacher-training plans as they exist in the several states. The questions and topics for discussion found at the ends of the chapters are intended to stimulate thought, to check to some extent on what has been presented and to bring out practical applications. The suggested references are to be used as much as facilities permit; classes may be held responsible for specific assignments. Written or oral reports on the references may also be required.

The purpose of the opening chapters is to give a brief his-

torical background in the light of which later practice and theory in industrial education may be studied with interest and profit. The report of the Douglas Commission, the pioneer work of the National Society for the Promotion of Industrial Education and the efforts of later national associations, all contribute to the theory and practice of industrial education as we today know it. Teachers, administrators and lay citizens alike are interested in the applications of federal legislation and state plans for vocational education. With this in mind the writer has attempted to give something in the way of a background; something in the way of explanations of how the present rapidly growing program came about; something of what that program seeks to accomplish; and something of the social, economic and educational contributions that can reasonably be expected to result and grow out of the present program.

The material in this book has been used in mimeographed form with industrial teacher-training classes, and has been modified and amplified as a result of those experiences. It is hoped that others may find the book of service.

In a record of the foundations of industrial education as presented in this book it is difficult to make adequate acknowledgments for all assistance received. The author is particularly indebted to Dr. J. C. Wright, Director of the Federal Board for Vocational Education, for his editorial assistance and for helpful suggestions on the chapter dealing with the Federal Board; to L. H. Dennis, State Director of Vocational Education, Commonwealth of Pennsylvania, for assistance with the chapter dealing with the National Society for Vocational Education, of which association he is a past president; and to Dr. G. D. Whitney, Director of Vocational Education, University of Pittsburgh, for reading the manuscript and for making helpful suggestions.

F. Theodore Struck

State College, Pa.
May, 1930.

EDITOR'S PREFACE

The foundation of Vocational Education in the United States has been in the process of construction during a quarter of the century. Few, indeed, of the 25,000 teachers, supervisors, and administrators now employed in this field of education had any large part in the laying of the corner-stone of this educational structure, which now enrolls more than one million students in the public schools of our country.

During the pioneer days it was necessary to develop a philosophy and fundamental principles of administration that would stand the test of the years to follow. When the National Vocational Education Act was passed by Congress it embodied much of the philosophy and experiences of those early pioneers.

In his book on "Foundations of Industrial Education," Dr. Struck has brought to the reader the story of the development of the idea, the crystallization of public opinion, the enactment of legislation, and the formulation of a going program. The story is a part of his own rich experience in Vocational Education. Those who have entered this field of education within the last five or ten years, and those who enter in the future, can never have the opportunity to gain these experiences first-hand. For these, and many others in general educational work, this book was written.

J. C. Wright,
Editor.

FOUNDATIONS OF INDUSTRIAL EDUCATION

CHAPTER I

INDUSTRIAL EDUCATION IN ANCIENT AND MEDIEVAL TIMES

The Background.—It is a mistake to think of industrial education as something of recent origin—something that had its inception along with the industrial revolution, the factory method of production, and the development of mergers and big business. No, industrial education is much older than that. In unorganized form it is practically as old as the human race; it has an ancestry of at least five hundred thousand years. Of course written records do not go back as far as that and much is left to conjecture about pre-historic, not to mention ancient and medieval times.

The earliest forms of industrial education no doubt centered around such problems as those of securing food, of providing shelter and of making clothing. The father or mother or some leader in the clan or tribe was the instructor; the method employed was usually that of demonstration and practice on the job. Following such very early and admittedly unorganized forms of industrial education we come to apprenticeship training, a more or less definitely organized plan of training. Even apprenticeship dates back much further than it is commonly supposed and it had a much wider application in ancient and medieval times than it is usually thought to have had.

Apprenticeship Training.—The term "apprenticeship" is by no means synonymous with "industrial education." Apprenticeship may be defined in various ways, but we will prob-

ably agree that the main purpose of true apprenticeship is *learning*. Apprenticeship without instruction and without learning is like sounding brass and tinkling cymbal—it would be apprenticeship in name only—a passing sound as distinguished from a concrete reality having distinguishable form.

The term "apprenticeship" is furthermore commonly associated in our minds with a contract either written or implied for service to be rendered. This service takes the form of instruction on the part of the master and learning through working on the part of the learner or apprentice. We shall learn, a little later, that apprenticeship has not always meant such a relationship. Even today it is customary, in some trades, to use the term "apprentice" for what in reality are "helpers" learning, if they learn, by the pick-up method.

In order to give a concrete example of a definition of the term "apprentice" we select from among a number of definitions the following used in the Wisconsin law: "The term 'apprentice' shall mean any minor, sixteen years of age or over, who shall enter into any contract of service, express or implied, whereby he is to receive from or through his employer, in consideration for his services in whole or in part, instruction in any craft, or business." [1]

There is good reason, however, for linking the discussion of early forms of industrial education to apprenticeship for in reality modern industrial education can be definitely traced to its ancient ancestor—apprenticeship.[2]

Apprenticeship training dates back to the ancient civilizations in Babylon, and more recent references to it are found in writings of the old Greeks. The references to these earliest forms of apprenticeship education are meager so that much is left to speculation. It is probable that in earliest days, as at present, there was much variation in what the term "apprentice" implied in terms of length of service, the exact nature of the instruction, and the relationship that existed between the apprentice and the master. Apprenticeship, furthermore, is not now, and has never been, limited to trade and industrial pur-

[1] Wisconsin Statutes of 1917, Section 2377.

suits; it is much broader than that in its scope; it includes all sorts of vocations and the professions as well.[2] Douglas points out that chivalry itself was a form of apprenticeship in which a boy served for seven years as a page and seven years as a squire before he was admitted into knighthood.

Among ancient peoples the apprenticeship relation was often that of either father to son or of master to an adopted son. It is quite clear that these relationships implied instruction even as it does today, but it is not always so evident how much instruction was involved, nor how much drudgery unrelated to the "science" and "mystery" of the trade was required.

Apprenticeship in the Middle Ages.—It may be recalled that our earliest written records of Egyptian and Babylonian civilizations date back to about 4000 B.C., and that Rome fell in 476 B.C. The period from about 4000 B.C. to 500 A.D. may be considered that of ancient history while the Middle Ages extend from about 500 A.D. to 1500 A.D., the period from 500 A.D. to 1000 A.D. being known as the Dark Ages. Little is known about apprenticeship in the days of the Roman Empire. This has led some writers to say that apprenticeship began in the Middle Ages, but it is now believed that this is not the case. We may differentiate between ancient apprenticeship and apprenticeship in the medieval period. Apprenticeship in Roman days was probably the predecessor, but not the father, of apprenticeship as conducted in the Middle Ages.

Although the Middle Ages cover a period roughly designated as from 500 to 1500 A.D., it is better to think of this period as comprising the following three distinct epochs: (1) *The period of transition.* This is the period from the fall of the Roman empire to about 800 A.D. It was a period when the invading German barbarian tribes were being fused with the citizens of

[2] Douglas, Paul H. *American Apprenticeship and Industrial Education,* p. 13. Columbia University Press, 1921.

Mays, Arthur B. *The Problem of Industrial Education,* p. 16. The Century Co., 1927.

Bennet, Charles A. In Lee's "Objectives and Problems of Vocational Education," p. 4. McGraw-Hill Book Co., 1928.

the older civilizations that they conquered. The term "Dark Ages" is frequently used to designate this period. (2) *The age of feudalism* (800-1300 A.D.). Or, as Harding[3] calls it: "The Typical Middle Age." The period begins with the reorganization of the Western Empire by Charlemagne and continues to the Renaissance period. The age of feudalism represents a period of history when feudal lords and the Church held the people under their political control. It was in this period that the Guilds developed and medieval apprenticeship grew up as a part of Guild activity. (3) *The Renaissance.* This, the period of "re-birth" did not begin in the various countries such as Italy, England, France and Germany at exactly the same time, but in general the years 1300 to 1492 or to 1500 embrace the years of the Renaissance. This was the period when people were again made free, when learning again flourished, when social relationships changed, when literature and art were revived, and when some of the world's finest cathedrals were erected in various European countries.

The Guilds.—The guilds of the Middle Ages were fraternities, societies or companies organized for several specific purposes. As trade rapidly increased, as men from the far East would bring their wares of beautiful textiles, precious stones, fine potteries, drugs and spices to Europe, the workers there created local associations in order to further their mutual welfare. Merchant guilds were formed to regulate and govern trade. Contrary to common opinion craftsmen were sometimes members of the merchant guilds for at first men were both producers and merchants. Apprentices and journeymen were lodged and fed with the master's family above the shop. The rear of the first floor was used for the shop, while the goods made were often sold in the front room by the master's wife or daughter. It was somewhat later that closer classification took place, and that the various crafts such as weavers, spinners, fullers, curriers, iron workers, masons, carpenters, gold and

[3] Harding, Samuel B. *Essentials in Medieval History*, p. 12. American Book Co., 1909.

silversmiths, bakers, shoemakers and others established guilds of their own.

The guilds of the Middle Ages are to be thought of as the forerunners or antecedents of the modern labor unions. They differed from our modern unions in several important respects. Unwin[4] says: "the guild is to be regarded—not indeed as the parent but—as the ancestor of the trade union, as it was also the ancestor of the modern employer's association, and of many other existing forms of social organization." Thus it is seen that the guilds were not, at first, made up exclusively of "workers" as distinguished from "masters" or employers. Some of the guilds were so organized that only master workmen who owned their own homes and their own tools could vote upon matters affecting the welfare of the guild—apprentices and journeymen were not permitted to vote. Another difference was that the guilds were sometimes granted special charters from the king and were given support from the town governments so that the town officers would arrest journeymen who would try to establish themselves in business without the consent of the guild.

It appears certain that small societies or guilds were organized as early as the eighth century, and that guilds arose in England in the ninth century. In England they were largely political in character, often not excluding others from the practice of the trade, whereas in Germany the guilds had little political importance before the thirteenth century.

Georges Renard,[5] in his illuminating little book entitled: "Guilds in the Middle Ages" points out that the aims of the guilds were "first and foremost fighting organizations for the defense of trade interests" but that in addition to economic aims they also upheld moral and social objectives such as requiring fair play between masters. Thus one master was not permitted to "corner the market" in raw materials and goods, but if a master or employer should happen to be present when

[4] Unwin, George. *Industrial Organization in the Sixteenth and Seventeenth Centuries.* Oxford, The Clarendon Press, 1904.

[5] Renard, Georges. *Guilds in the Middle Ages.* Translated by Dorothy Terry. G. Bell and Sons, Ltd. London, 1919.

a dealer was selling goods to another master, the former, or first mentioned master, could demand similar goods at the same price.

By the middle of the fourteenth century the craft guilds were well established in England. The Black Death (1348) reaped its harvests about the time that decaying feudal customs were giving way to modern developments.

The type of special privilege that was granted to guilds can be illustrated by the following quotation[6]: "When caps went out of fashion and cappers were becoming impoverished, an Act of Parliament bade every person above the age of six years, with few exceptions, to wear caps again."

Promoting Craftsmanship.—The guilds promoted quality in work. Masters were compelled to teach the whole trade to apprentices. Poor workmanship was not tolerated, and persons who persisted in it were excluded from the craft guilds. The names of many of the great craftsmen of the Middle Ages have been forgotten but even to this day and to future generations yet unborn the work of their hands, as exemplified in various materials of construction, gives eloquent testimony to the ideals that dominated their work; to the skill that they possessed, and to the sustained effort they put forth.

We quote from the Encyclopedia Americana[7]: "the by-laws of the German guilds contained regulations as to the training of apprentices, the practice of one's trade in different towns as journeymen, and the requirements of the master. Thus was laid the foundation of that excellent workmanship that characterized the Germans in later years." The practice of having apprentices go from one town to another to learn their trade as was customary in Germany in the building trades, was not universally practiced. As a matter of fact much rivalry developed between guilds in cities such as Genoa, Naples, Lisle and Paris. Trade secrets were carefully guarded; members of the crafts were sworn to secrecy in matters affecting guild welfare.

[6] Kramer, Stella. *The English Craft Guilds and the Government*, p. 113. Columbia University Press, 1905.

[7] *Encyclopedia Americana*, Vol. 13, p. 534.

Persons who would carry away trade secrets to foreign countries were subject to the law that members of the family and relatives were to be imprisoned in their stead and if that did not suffice they were to be followed and were to be secretly put to death.

Educational and Social Service.—The guilds rendered important service to their members in that they provided the only education that was available during a time when learning in its various forms was at low ebb. They gave both vocational and social education and, what is equally important, they protected their membership from oppression by feudal lords and others in authority at a time when that was very lightly considered by the ruling groups.

Apprenticeship education, during the Middle Ages, was the means of raising men from the position of slave or feudal vassal to one in which the craftsman became essentially a small property holder and a free man. There were times in Europe as well as in America, as we shall later see, when apprenticeship was unjust, when it was the next step to slavery. On the other hand apprenticeship training served exceedingly well the educational requirements during several centuries of political, religious and social unrest.

The guilds also had religious and benevolent features. They kept a fund, made up from assessments and fines, for feasts, for masses, for sick and poor relief, and for the proper burial of needy members.

Summary.—Earliest written records disclose that some forms of apprenticeship existed among the Egyptians and Babylonians. Apprenticeships also were in effect during Greek and Roman days. These apprenticeships were predecessors, but not the parents of medieval apprenticeship. The craft guilds established apprenticeship education during the Dark Ages when other forms of education were almost non-existent and eventually developed a new point of view toward everything included in the word "learning." This changed attitude of mind blossomed forth during the Renaissance period in the form of masterpieces in literature, art, architecture, and in the industrial arts such

as the world had never known. Undoubtedly much of the great progress made in the field of the industrial arts can be traced to the influence of the guilds, to the systematic apprenticeship education they set up, to the ideals of quality in workmanship, pride in craftsmanship, and the respect for work well done that they engendered among those that came under their influence.

Guild life also brought about a gradual evolution from serfdom to freedom, from labor to owner, from worker to craftsman.

Apprenticeship in the Middle Ages developed when social life was in a state of flux; when invasions and wars, among them the Hundred Years' War (1336-1431) were constantly waged in the great movements toward social, political and religious freedom; when workers found it necessary to protect themselves through associations, and when the political power of the feudal lords and the Church gradually gave way to greater freedom for the poorer classes.

The milestones of progress may be represented as follows:

TABLE I. MILESTONES OF RACE PROGRESS

(It is suggested that the development of industrial education be studied with reference to the classification)

Medieval Times	1500 A.D.	The Renaissance
	1300 A.D.	
	800 A.D.	The Age of Feudalism or the typical Middle Age
	476 A.D.	The Dark Ages The Fall of Rome
Ancient Times	375 A.D.	The Germanic Invasion
	0	The Birth of Christ
	4000 B.C.	Approximate Date of Earliest Written Records

QUESTIONS AND PROBLEMS

1. Which is older in the history of the race, agricultural or industrial education?

2. When was division of labor first introduced in production or manufacture?

3. What brought about feudalism? What hastened its downfall?
4. What were the typical classes in society in feudal days?
5. What trades or crafts were recognized in the Middle Ages?
6. What is an indenture? When was it first used in connection with apprenticeship?
7. What were typical conditions of apprenticeship in the Middle Ages?
8. When was apprenticeship at its height in England?
9. How did the number of apprentices in Elizabethan days compare with those of today?
10. Of what particular value, to current thought and practice in industrial education, is a knowledge of guild-life and apprenticeship in the Middle Ages?
11. How old are guilds? Where did they first appear in Europe? What was their primary purpose?
12. How old are the ancient civilizations of Chaldea and Babylonia?
13. Discuss the guilds in Roman days.
14. Write out a definition of apprenticeship.

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CHAPTER II

INDUSTRIAL EDUCATION FROM COLONIAL DAYS TO THE PERIOD OF NATIONAL DEVELOPMENT

Apprenticeship in England.—In order to appreciate the conditions under which apprenticeship developed in Colonial America, it will be advisable to keep in mind the conditions of employment and labor that existed in the mother country at about the time that the colonies were established in America.

By the middle of the fourteenth century the idea of genuine apprenticeship was well established as a desirable institution of learning for persons engaged in the industrial arts. No doubt major credit for this belongs to the guilds which for centuries had upheld the best ideals of craftsmanship. Gradually, however, the guilds were losing their hold upon the workers. Little by little they increasingly restricted the trade freedom of their members, and stood in the way of social as well as industrial progress.

The Decline of the Guilds.—The decline of the guilds arose from a combination of sources. Irksome restrictions that specified in great detail just what members could make, what materials were required or prohibited and who could or could not enter the crafts were sources of discontent, as were also restrictions that prevented men from changing their trade or occupation. Rivalry as to trade rights and privileges between different guilds were also sources of trouble. Added to this was the gradual loss of the close relationship that used to exist between the master and the apprentice. As specialization in work increased, as more apprentices were hired and as the masters grew in influence the close father to son or father to adopted son relationship gradually gave way to that of master to workman, of employer to employee. The guilds had risen in response to social and economic need for protection of workers against neigh-

bors and feudal lords who were little more than robbers; they were a source of freeing the serf-mechanic, and were closely tied up with the rise of medieval towns. The guilds declined through over-regulation, through the practice of farming out contracts to different masters and, in general, because invention created conditions that made it possible for masters to evade the requirements that the guilds had imposed upon them in former years.

The Statutes of Laborers.—To show that there was need for guilds one may refer to how the ruling class had for centuries tried to control workers through arbitrary power and later through legislation as well. It was in 1351 that the English parliament passed a statute forbidding laborers from asking for wages higher than those that were in effect before the great plague known as the Black Death that made its first appearance in England in 1349. This law was followed by a series of similar ones. They comprise the so-called "Statutes of Laborers" that were in effect for the next two centuries, but they were a fertile source of constant ill-feelings between workmen and masters.

Apprenticeship in Elizabethan Days.—The reign of Queen Elizabeth (1559-1603) marks an important turning point in guild development in England. It may be recalled that her reign was one marked with great social and commercial progress. An insight into the general life of the time may be gleaned from the following quotation taken from Green's history of the English people:[1]

"The disuse of salt-fish and the greater consumption of meat marked the improvement which was taking place among the agricultural classes. Their rough and wattled farm-houses were being superseded by dwellings of brick and stone. Pewter was replacing the wooden trenchers of the earlier yeomanry; there were yeomen who could boast of a fair show of silver plate"—"carpets superseded the filthy flooring of rushes"—"gloomy walls and serried battlements disappeared from the

[1] Green, J. R. A. *A Short History of the English People.* Harper & Bros., pp. 399-400.

dwellings of the gentry. The strength of the medieval fortress gave way to the pomp and grace of the Elizabethan hall."

The Statute of Artificers.—The old Statutes of Laborers, that had been passed two centuries before Elizabeth came to the throne, could no longer be enforced. For many years there had been some regulations of guilds but conditions needed to be improved. There was little uniformity in the regulations and requirements as laid down by the guilds and they had already lost much of their former influence. In 1563 a very pretentious legislative measure, known as the Statute of Artificers was passed. This measure attempted to regulate apprenticeship on a national basis. It did not propose to leave matters of wages and working conditions for the masters and workers to settle as they saw fit. It was at once a body-blow to guild existence in that it took away guild control, and it was a stimulus to apprenticeship training in that it required every craftsman to serve an apprenticeship as a rule seven years in length. It laid down definite requirements as to hours of work and other requirements such as the length of the contract period and the conditions under which it could be modified. Workers were required to labor from five to seven or eight o'clock in the summer time, and during daylight hours in the winter. Workers were to get the rate of wages established by the justices of the peace in the various counties. In most trades the period of service was to be by the year. The Statute was modeled, in the main, in conformity with the then existing regulations of the London Guilds.

The Statute of Artificers also sought to provide for the relief of the poor of which there were a great many, for wars, famine, disease, and lack of scientific knowledge concerning health were taking a terrible toll. Pauperism was aggravated by evictions, by "enclosure" laws that subdivided monastery and other lands and required the farmers to enclose them, which forced the poorer ones to give up their vocations, and by increased competition in many lines of work.

Ambitious as was this piece of legislation, it could not bring about a national system of apprenticeship. It helped, in a way,

to postpone the day when apprenticeship of the old type was to decline in importance, but it might have been better if the effort had been made to regulate the guilds wisely rather than to try to wipe them aside by sweeping legislation. The guilds were rendering social, moral, fraternal and educational service to their membership that the national government of England was not prepared to duplicate.

Need for Labor in the Colonies.—A new country, abounding in wealth of natural resources, offers unusual opportunities for both poor and rich. In the process of building homes and towns, and in developing agriculture and trade or industrial pursuits much labor is required. So it came to pass that whereas England had an over supply of needy, poor, and unemployed, the Colonies were much in need of labor, both skilled and unskilled.

England had already passed legislation in accordance with which pauper and poor children could be "apprenticed"—the boys until twenty-one years of age, the girls until they were eighteen, or until they were married. This developed into one of the worst forms of white slavery with which the English speaking peoples have ever had contact. Apprenticeship for these poor children was apprenticeship in name only. It was simply indentured involuntary servitude, and that in a very bad form for it took children entirely too young to work and resulted in shameful conditions.

Many poor people, both adults and children came to America in the hope of earning, by the sweat of their brows, economic freedom. Not having funds with which to pay for their long, expensive journey across the Atlantic ocean they bound themselves to serve, usually for a period of four or five years, though sometimes for longer terms, as indentured servants, in payment for their passage. In addition to those who were voluntarily indentured there were others who were sent into servitude against their will. Among the latter were children and adults—some of them "indentured apprentices," others stolen or lured from their homes to be sold by heartless persons, still others seized for debts they could not pay.

following the year 1865, and specialization has been increasing ever since.

Some By-products of the Early Factory Period.—The rapid development of power machinery led to greater demands for labor which in the case of the textile industries were met by the employment of younger children and generally by employing semi-skilled operatives. Apprenticeship in many cases became but a well-sounding term for indentured servitude, both voluntary and involuntary. The laws regulating child labor varied greatly in the various colonies. Often children ten and twelve years of age were employed for long working days.

The introduction of new inventions and discoveries makes necessary a readjustment of workers. To illustrate, a recent government estimate was made to the effect that in less than ten years more than 2,000,000 people have been thrown out of employment in the United States due to this cause. They are finding re-employment in relatively new kinds of work, mostly of the service type, such as automotive repair work, operating gasoline stations, selling insurance, etc. Sometimes these readjustments of employment are hard to make as they may involve leaving one's former home, and may also require special training and special aptitudes.

It was not until the early part of the twentieth century that federal and state laws were passed that effectively reduced to a minimum the exploitation of child labor and other undesirable forms of industrial work—such as sweatshop work.

The Manual Labor Movement.—It was in 1820 that Joseph Neef and William Maclure organized what is known as the manual labor movement in the United States. It was a plan of introducing manual instruction into the schools on the basis that pupils would work, under school auspices, for about half of the day, and would receive academic instruction during a part of the remaining time. The plan was a by-product of the Fellenburg movement in Switzerland. The general ideas back of the movement were quite right but it did not get very far because public sentiment was not ready for what appeared to the majority of the people at that time to be a radical innovation.

There was much discussion in those days not only as to whether or not manual instruction should be taught in the schools, but the whole matter of public support for high schools was an unsettled question.

The Period from 1840 to 1900.—The period from 1840 to 1860 represents a time when there was a changing sentiment among business men, manufacturers, engineers, and to some extent among school people, for types of instruction that were not entirely bookish. In 1862, during Abraham Lincoln's administration, and during the days of the war in which we were then engaged, the Morrill Acts were passed establishing the Land Grant Colleges of the United States. This is mentioned partly because it reflects two points of view held at that time by educational leaders. The first is that manual instruction that was to be taught should be general—they did not believe in teaching specific trades in school but instead wanted general training. It is easy to see how they would come to this conclusion for their thinking was dominated by what we today call the "old psychology" or "faculty psychology" that held that accuracy or skill developed in one kind of work would carry over in a large way to other fields. According to this theory, if one received general mechanical training it would be effective training for a great variety of trades. Another error, as we see it, was that the school people of that time did not differentiate clearly, as we do today, between vocational training of secondary or less than college grade that prepared specifically for the trade and industrial pursuits and professional training such as that for engineering and for research work. It can be readily seen then, especially when it is recalled that in those days there were many who believed the major public responsibility for education beyond the "common school" to be leadership training, that the effort for vocational education took the form of vocational education of college grade.

In 1876, at the Centennial Exposition held at Philadelphia, there were exhibited a series of exercises, in wood and metal, made by engineering students in Russia. These appealed alike

to laymen and school people. There was an evident need for the development of mechanical skill among those who worked at trade and industrial pursuits and the idea also pleased the educators for did it not represent the very thing they wanted—general industrial training? A few years later in 1880 the first manual training school was started; by 1900 these schools were fairly well established in the United States.

Summary.—The span of years from 1600 to 1900 represent an epoch of great social and economic progress in what, during that period, became the United States. Within the limits of those three centuries is crowded the story of our political development from its very beginnings to the time when the United States had become one of the great world powers. In terms of working conditions in industry, that period takes us from indentured involuntary servitude and slavery days to the time when the standards of living and of employment for workers have gone perhaps higher than elsewhere in the world. Educationally that period takes us from a time when apprenticeship was the only means, for most people, of getting a limited education to one where free public school education is not only available, but is made compulsory for all persons otherwise eligible for at least six years, taking in children approximately from six or seven to fourteen years of age as a minimum requirement.

Within this period, also, the old form of apprenticeship has passed away. The factory method of production has been developed, and modern apprenticeship had its beginning. Both modern labor unions and modern employers' associations were formed and both have come to exert much influence on industrial education in industry and in the schools.

In the latter years of the nineteenth century manual training developed in response to the ideas held by educators of that period that general industrial education (not specific trade training) was desired as a part of the public school curriculums. The foundation for vocational industrial education in the public schools, as we today understand it, was to be laid a little later—as it was found that general industrial education is not efficient trade training as was formerly held.

TABLE II. CONTEMPORARY HISTORICAL AND INDUSTRIAL DEVELOPMENTS FROM 1500 TO ABOUT 1900

Period of National Development	1900	Demand for general industrial training as distinguished from specific trade training
	1880	First manual training school
	1876	Centennial Exposition
		Merging of industries Increased specialization The factory period begun in United States upon an impressive scale after the Civil War
	1861–65	The Civil War
Period of Adjustment		Discussions concerning place of vocational education Manufacturing began to develop in the United States
	1812	
	1789	Slater's first complete set of spinning and weaving machinery, Pawtucket, R. I.
	1788	Constitution Ratified
Period of the Revolution	1787	Cotton factory operated at Beverly, Massachusetts
	1775	Christopher Tully's spinning machine, Philadelphia
	1760	Beginning of Industrial Revolution in England
	1750	Manufacture of iron prohibited by England
The Colonial Period		Restrictive legislation in England Manufacture of woolen goods in Colonies prohibited by England
	1699	
	1619	Slavery in Virginia
	1607	First permanent English colony
	1600	
	1500	Beginning of modern times

QUESTIONS AND PROBLEMS

1. What is meant by an involuntary indenture?
2. Describe the conditions of white servitude in Colonial days.
3. When was anthracite coal first used for fuel?
4. What was the effect, if any, of negro slavery upon white servitude in the colonies?

5. How did the development of power machinery result in the decline of apprenticeship?

6. Explain why the industrial revolution in America was not contemporary with the one in England.

7. Why was it that the United States lacked highly skilled artisans during the nineteenth century?

8. On what grounds did the educators of the latter part of the nineteenth century oppose specific trade training in the public schools?

9. What was the first national legislative Act, passed in the United States, that gave federal support to vocational education?

10. Did the Agricultural and Mechanical colleges serve the purposes for which they were created?

11. What was the attitude of the colonies toward convict labor?

12. What was the probable extent of negro slavery in the provinces during colonial days?

13. What brought about the development of: (a) modern labor unions; (b) modern employers' associations?

14. Is specialization in industry desirable?

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CHAPTER III

MANUAL TRAINING

Introductory Statement.—An interesting side-light upon the development of industrial education in the United States may be obtained from a study of the manual training movement. Not that manual training is to be regarded as vocational industrial education. Its major purposes, as will be explained a little later, did not center around *specific* trade training but emphasized *general* industrial training. Manual training deserves consideration in connection with the study of trade and industrial education because the two are often confused; because their ideals and objectives are misunderstood by many; because the results or outcomes in the two types of education are distinctly different and therefore need to be distinguished, one from the other; and because the traditions and ideals of manual training have strongly influenced current educational thought and practice.

Early Beginnings.—If one wishes to study the early beginnings of what eventually developed into manual training as a school subject one must go back several centuries before the term "manual training" was coined upon American soil. The teachings and beliefs of men like Comenius, Rousseau, Pestalozzi and Froebel all contributed to the evolution of manual training. If the name of any one of those pioneers in education were to be singled out for special mention in connection with the development of thought that was to crystallize into what was later called manual training, it would be that of John Henry Pestalozzi (1746-1827). Charles A. Bennett refers to him as "the father of manual training."[1] If one wishes to study in detail the development of thought and practice that led up to

[1] Bennett, Chas. A. *History of Manual and Industrial Education Up to 1870*, p. 107. The Manual Arts Press.

its introduction into the United States, it is suggested that the work of Comenius, Rousseau, Pestalozzi and Froebel should be examined with care to the changing conceptions of education.

One of the apostles of Pestalozzi and Froebel was Uno Cygnaeus of Finland who organized the public schools of Finland on a modern basis making manual work compulsory in the primary schools for boys in 1866. He began, about 1858, to put into practice his ideas concerning the pedagogical value of manual training. In turn the thought and the achievements of the illustrious educators just mentioned, including Cygnaeus, was to be improved upon by Otto Salomon.

Otto Salomon and Naas.—The name of Otto Salomon will always be mentioned in connection with the development of sloyd. It was Otto Salomon who did most to develop Swedish sloyd. Naas is an ancient lordship situated about fifty miles from Stockholm. There a free privately endowed school was opened for children ten to fourteen years of age in 1872. In June, 1875, a normal school was established in order to train teachers of sloyd. This program was under the charge of Otto Salomon and an assistant, Mr. Johanson.

The term sloyd (Swedish: Slöjd) is one for which we have no exact counterpart in the English language. *Sloyd stands for the manual labor proper to schools and domestic work.* In the primary schools of Sweden manual training was limited, as a rule, to work in the following materials:

1. Iron-working: forging, lockmaking.
2. Working in straw and willow: basketmaking.
3. Working in paper and cardboard.
4. Woodworking, including turning, sculpture, carpentry, wooden-ware.

It was at Naas that the underlying psychology of sloyd was best developed; it was there that the methods and the technique of sloyd were improved; it was from there that we, some years later, got the ideas that were introduced into our own schools under the name of sloyd and manual training.

Dr. Salomon was always ready to acknowledge his indebtedness to others and he was modest in the claims he made for the contributions that were the results of his work at Naas. On one occasion, referring to the protest against purely theoretical training, he said: "Far be from me the suggestion that this protest has been raised in our little country alone, and that we have been the first to recognize the necessity of the reform which now engages us.

"Does not history teach us that the people being ripe for any reform of which the need is felt, this suddenly appears, and most frequently at the same time in many countries? Surely, then, it is not befitting either an individual or a people to claim the privilege of having been first to possess that which is the common property of humanity."[2]

By no means all of the teachers trained at Naas were Swedish. Of the 126 persons enrolled there in 1884, 107 were Swedes, 2 Norwegians, 4 Finlanders, 1 Dane, 2 Germans, 5 Austrians, 2 Russians, 2 English, and 1 Dutch.

Objectives of Sloyd.—The chief objectives of sloyd as seen by Otto Salomon are of interest:

1. To cause the child to acquire a general skill of hand.
2. To awaken in him the taste and love of labor.
3. To call forth spontaneity—the initiative.
4. To give him experience of the fact that order and correctness in labor are necessary elements of progress.
5. To develop the faculties of attention and perception.
6. To render the child earnest and persevering.
7. To inspire the esthetic sentiment without allowing it to become vague or exaggerated.
8. To neutralize the injurious effects produced upon the system by intellectual studies, and by the sitting position which the child must maintain during the ordinary lessons.[3]

[2] *Report of the Commission on Industrial Education.* Pennsylvania, 1889, p. 549.

[3] Salomon, Otto. Address, Sept. 21, 1883. Quoted by the *Report of the Commission on Industrial Education.* Pennsylvania, 1889, p. 554.

Much emphasis was placed upon teaching general as distinguished from specific skills of hand. It was thought that the completion of the one hundred objects that made up the course would develop hand skill that would function to advantage in many kinds of situations. In order to portray the thought of the time we quote from a Report by Sluys and Van Kalken: "By the methodical handling of tools, the making of a hundred objects, forming a progressive series, the scholars are made to acquire skill—a general address of the hand, which renders them fitted, on leaving the school, to undertake, under favorable conditions, the apprenticeship to any trade whatever, and to execute without assistance works of every kind which present themselves every instant in practical life." [4]

Sloyd was regarded not as apprenticeship training but as pre-apprenticeship training.

The consensus of opinion among educators during the latter part of the nineteenth century appears to be that the public schools of less than college grade should not undertake definite trade training. Sloyd became well established in Sweden partly because the work had frankly utilitarian objectives. It did not pretend to be trade training—that would have been offensive to the traditions and beliefs held by the school people—but it was based upon a set of objects or projects that were selected for their immediate utility. At Naas all work *de luxe*, work of fancy and diversion, was prohibited. Toys for boys ten to fifteen were not considered desirable objects to make in the school shops. It was believed that they would give but brief pleasure; that parents did not esteem such work; and that more lasting and deeper satisfaction for the pupil would be found in making articles that could be put to use in the home.

The utilitarian aim that controlled the selection of objects to be made did not exclude the art elements. Appropriate decoration, good proportion, beauty of line and suitability of material were all factors that were emphasized.

In order to instill due appreciation of honest work it was

[4] Sluys and Van Kalken Report. Quoted by Pennsylvania *Report of the Commission on Industrial Education*, p. 543.

recommended that the articles made should be left unpolished or unpainted. The thought was that boys would have a tendency to cover up inferior or defective workmanship with finishes such as wax and paint.

It was held to be desirable to have objects made completely by the pupil in order to avoid division of labor. The objects were to be arranged in a series progressive as to learning difficulty, and also with reference to the amount of physical strength required for their execution.

Furthermore, the work selected was to be hygienic; it was to be, as far as possible, of a kind that would develop bodily vigor, and such as could be performed in a standing position.

Such work as tailoring did not meet the requirements because it involved a sitting posture and was considered effeminate. Many apparently still believed with Rousseau that smithing was not desirable because it was too dirty. "It is necessary, also to make account of cleanliness. I shall not make of your son a horseshoer, an iron-worker, a blacksmith."[5]

Of the various kinds of work taught, that in wood was looked upon with greatest favor because it was clean and useful, the work could be done in the house, it gave proper exercise, involved good posture, required skill and industry and did not exclude the expressions of elegance and taste.

Description of Shops at Naas.—Sloyd as taught at Naas included a variety of work—making woodenware, turning, carving, and elements of carpentry work. The knife, much used by Swedish peasants to cut many different objects out of wood, is an important tool in sloyd. The apperceptive background formed by previous home experience is thus utilized in introducing the course of instruction.

Standard tool equipment consisted of 46 tools, including the bench, turning lathe, carpentry tools and the sloyd knife.

Twelve pupils were considered to form a class of proper size for shop instruction. Periods of from two to two and one-half hours' duration were advocated for shop work. Four-hour periods were considered too long for boys from ten to fifteen

[5] Rousseau, in *Emile*.

years of age. It was recommended that shop work be taken at least once each week. In many of the Swedish schools four to six hours per week were spent at sloyd.

The principle of self-help was kept in the foreground in teaching shop work since it was regarded as a desirable means of developing resourcefulness and initiative.

A collection of models was usually kept in or near the shop. This set of models cost, in those days, about $14; the tools, including the lathe, grindstone and benches for twelve pupils cost about $120.

The Russian System.—In 1868 Victor Della-Vos introduced into the Imperial Technical School at Moscow a method of manual instruction that has sometimes been called the Russian System of manual training to differentiate it from sloyd or the Swedish system of manual training.

About the time that Della-Vos began his work at Moscow, the Russian people were just beginning to be free. It was not until 1860 that serfdom was overthrown in Russia. The vast majority of the people had exceedingly limited opportunities for an education. The Muscovite princes had established the line of the Czars and the ruling house of Russia had granted a liberal endowment to establish and conduct, at Moscow, the engineering school where Della-Vos introduced his system of teaching.

The students at the Imperial Technical School entered at approximately eighteen years of age. Some of them had obtained practical experience with tools before they entered. Some of the work taught in the school, notably the foundry practice, was conducted on a productive basis, there being some full-time workmen on duty all of the time. The course of study involved about twelve hours of shop work per week and in the final year approximately half-time.

Little was known about Victor Della-Vos in America until the year 1876 when the Imperial Technical School sent over to the Centennial Exposition at Philadelphia an exhibit of exercises in wood and in iron. These series of exercises were arranged in what was considered to be a logical order for teaching pur-

poses; they constituted the basis of the Della-Vos or Russian system of manual training.

This system was essentially a "laboratory method" of teaching, the method being quite similar to teaching other laboratory work involving a given set of "exercises."

Entirely independently of Della-Vos several educational institutions in the United States were working along somewhat similar lines. Dr. Calvin M. Woodward [6] tells us that in 1870 a woodworking shop and an ironworking shop were opened in connection with the course in architecture and of mechanical engineering at the University of Illinois; that Stevens Institute had equipped a series of shops in 1871 and that Washington University, St. Louis, had equipped a shop in 1872 for engineering students.

About the same time, also, interest in manual training was receiving recognition in France, Germany, England, and other countries.[7]

The Centennial Exposition.—Tucked away in an inconspicuous place at the Centennial Exposition was the exhibit from the Russian Imperial Technical School. It attracted relatively little attention. Among those who saw it, was Dr. Calvin M. Woodward of the Engineering Department of Washington University who wrote in part: [8] "It showed with remarkable fullness and logical arrangement the true educational method of tool instruction. It presented, clear-cut and definite, what before had been ill defined or unthought of."

Professor Woodward was much impressed with the exhibit. Several books were written, many visits were made, and talks were given by him in the years shortly following, in explanation of the manual training idea. His own school at St. Louis

[6] Woodward, C. M. *The Manual Training School,* pp. 2, 3. D. C. Heath & Co., 1887.

[7] Monroe, Paul. *Cyclopedia of Education,* Vol. 4, pp. 124-127. The Macmillan Co. See also: Pennsylvania, Commonwealth of, *Report of the Commission on Industrial Education,* Harrisburg, 1889.

[8] Woodward, C. M. *The Manual Training School,* pp. 3, 4. D. C. Heath & Co.

became the Mecca for visitors from all over America and from foreign countries.

President J. D. Runkle, of Massachusetts Institute of Technology was also greatly impressed with the method that had been developed by Della-Vos. He recommended that a series of instruction shops be made available for the students at his institution. His suggestions were soon carried out, the equipment being practically installed by 1877.

Thus, while the manual training movement has its roots deep down in the educational philosophy of Comenius, Rousseau, Pestalozzi, and Froebel, the immediate impulse to its development in the United States may be said to have come from the Centennial Exposition at Philadelphia in 1876.

The Philosophy of Manual Training.—Men like Otto Salomon, Calvin Woodward and J. D. Runkle, let us be reminded, thought of manual training primarily as a means of general education and development. This is evident in many direct statements made concerning the purpose of manual training. Professor Woodward took special pains that people should differentiate between the manual labor movement, which had attracted some attention for a half century or so in various countries, and manual training, the new educational development.

Manual training, as then conceived, rested upon the old faculty psychology. In accordance with the latter we were believed to have general faculties, such as the faculties of sight, hearing, reason, carefulness, neatness, accuracy, honesty, and so forth. It was thought that the faculties developed in any field would "carry over" to any other situation in life having a similar need for accuracy, neatness, and skill. Such a general "transfer of training" is denied today by leading educational psychologists. In lieu of the former theory we now believe that transfer will take place approximately only to the extent that there are common elements in the things learned and those required in the new situation. The originators of the manual training idea, believing as they did in faculty psychology, felt that the training given through a set of exercises as in the

Russian system, or through a set of objects to be completed as in sloyd, would have broad application to life.

Manual training was advocated by many for the double purpose of providing physical expression for boys of school age, and of developing general capacities fitting for industrial pursuits. Somewhat later vocational objectives were at times given to manual training, and the shop work was made more intensive, thus tending toward the development of technical schools fitting for the junior engineering vocations.

Sloyd and Russian Handwork.—It will be of interest to make comparisons between the two systems of manual training. Both had much the same objectives, used much the same materials and tools. One distinct difference is that whereas the Russian system was based upon a series of exercises the Swedish system was based upon a set of one hundred objects or projects, each complete in itself, and made to serve a real purpose in the home-life of a family. Evidently sloyd had a certain advantage from the standpoint of maintaining the interest of the learner. Both systems had short-comings. They were too formal for our purposes. The emphasis was often too much upon the mechanical or manipulative phases of the work rather than upon manual training as a socializing activity—one through which appreciations, attitudes and much general knowledge was to be taught as well as one for the development of skills. Both types of manual training had their ardent supporters as well as those who saw little in them. Elizabeth Josephine Woodward speaking in 1891, made the following summary remarks concerning sloyd: "The sloyd claims to instil a taste for and love of work in general; to inspire respect for rough, honest bodily labor; to develop the sense and love of order, exactness, cleanliness, and economy; to cultivate perseverance and the power of concentration; to promote general dexterity; to train and develop the perceptive, analytical, constructive, and inventive faculties; to develop and strengthen the body; to cultivate the esthetic sense; and to do all this for young children more effectively than any other educational system of manual training, because it aims to interest the pupil, adapting the exer-

cises to his mental and physical ability by means of careful methodical progression, and producing a useful article as a result of the work."[9]

It was soon found, however, that certain adaptations had to be made. The models were too difficult for young pupils; they consisted of too many parts; they called for too much repetition; some were not of sufficient interest to our boys and others needed modifications in design to conform to American standards of beauty.

As opposed to the generous claims just quoted, Dr. C. M. Woodward had the following terse statement to make in 1889, concerning sloyd:[10] "However well they (the sloyd schools) may suit the wants and constitution of Swedish society, I am sure that *sloid* will never flourish on American soil." Dr. Woodward felt that the exercise system of manual training as modified from the program originally outlined by Victor Della-Vos was, by all odds, the better of the two systems for us.

Development of Manual Training.—Manual training developed rapidly in the United States. By the year 1900 it was well established. With experience came modifications in points of view and corresponding changes in aims and methods. Before the first decade of the twentieth century was to elapse leaders in industrial education were differentiating between general industrial education of the manual training type and specific vocational industrial education such as was to be provided for in the National Vocational Education Act of 1917.

Manual training, given for purposes of general education, was soon to be expressed in terms of the newer theories and beliefs in education; it was soon to emerge from a "special" subject into one that was considered fundamental and one that was to be required in grades seven, eight and nine. Its very name was gradually to be changed in many states to industrial arts education.

[9] New England Conference of Educational Workers. *A Conference on Manual Training.* Boston. Printed by Geo. H. Ellis, 1891.

[10] Woodward, C. M. *The Manual Training School,* p. 333. D. C. Heath & Co., 1889.

evolved an enlarged and enriched subject known as industrial arts education, with objectives distinctly different from those of vocational industrial education. Each is necessary; each has its place, and each will continue to develop in the forward trend common to all education that serves the purposes for which society is constituted.

QUESTIONS AND PROBLEMS

1. What was Rousseau's attitude toward trade education?
2. What basis is there for calling Pestalozzi "the father of manual training"?
3. Did instruction in sloyd develop slowly or rapidly in Sweden during the last quarter of the nineteenth century? Why?
4. How was sloyd introduced into the United States?
5. How valid were the claims made by some during the early years of the twentieth century that manual training prepared for trade and industrial pursuits?
6. Compare the objectives of manual training as stated about 1890 with those set forth today.
7. Make a list of at least six modern objectives to be kept in mind in teaching manual training. List these in the order of their relative importance, for instruction in grades seven, eight and nine.
8. What outstanding contribution to manual training was made by Dr. J. D. Runkle; by Professor C. M. Woodward?
9. How do you distinguish between the manual training and the manual labor movement in education?
10. What difference, if any, is there between manual training and industrial arts education?
11. Can you distinguish between a manual training school and a trade school?
12. What difference, if any, is there between trade training and industrial training?
13. Do the two terms "industrial arts education" and "industrial education" have the same meaning? If not show their difference.

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CHAPTER IV

INDUSTRIAL ARTS AND VOCATIONAL INDUSTRIAL EDUCATION

I. RELATIONSHIPS AND OBJECTIVES

In order to show as clearly as possible the differences as well as the relationships that exist between industrial arts education on the one hand and vocational industrial education on the other, there is given herewith a brief discussion aiming to bring out the essential differences in aim and the more fundamental relationships of purpose that should be clearly recognized in teaching as well as in the administration of these types of education.

Practical Arts Education.—On every hand there are abundant evidences of the so-called useful and practical activities of man. They involve such enterprises as building, manufacturing, mining, farming, transportation, communication and service in a vast variety of forms. The average person finds it difficult to secure intimate knowledge of more than a few of these activities, or even an appreciative understanding of them.

In order to assist boys and girls in getting worth-while information about such practical activities, and in order to give them some first-hand experiences in shop, field, home and laboratory work, courses of instruction are being given under the name of practical arts education. The term "practical arts" as used in education is the broad, inclusive term that embraces as subjects of instruction: manual training, industrial arts, mechanic arts, household arts, domestic science, domestic art, general agriculture and general commercial education.

Industrial Arts Education.—Industrial arts education is one of several forms of practical arts education—the form that concerns itself with education definitely related to those mani-

fold practical activities of mankind that are distinctly industrial in character. In terms of school years it may extend from the first grade on through the senior high school and beyond. It includes such activities as: manual training and mechanic arts instruction. For our purpose we shall deal only with industrial arts education beyond or above the sixth grade.

Difference between Industrial Arts and Vocational Industrial Education.—It can be concluded from the preceding paragraphs that industrial arts education is intended to contribute to the general, all-around development of individuals. It is fundamentally a part of general, as distinguished from vocational education; it helps to make persons intelligent consumers by giving them a limited contact with, and some information about, tools, processes, materials, design and life problems, but it does not aim directly to impart vocational proficiency. In other words it does not aim, and could not, in the time allowed, make efficient producers.

Because of the distinct difference in aims just referred to one can readily see how industrial arts education is less specialized and less intensive in character than vocational industrial education. As regards pupils there is a corresponding difference. Those taking industrial arts education are usually younger. They are going through the "try-out" stage; they have not definitely determined their vocation.

There is also a characteristic difference in the amount of time spent in shopwork. For purposes of industrial arts education a minimum of 120 minutes or two clock-hours of shopwork per week is recommended in grades seven and eight. In vocational industrial education half time (from twenty-five to thirty hours per week) should be devoted to shopwork.

Typical industrial arts school shop equipment is lighter and less expensive than that intended for a trade shop where production methods are emphasized.

The differences in aim, in means and methods, and in the age, maturity and viewpoint of the pupils in industrial arts classes as distinguished from vocational industrial classes justify and demand teachers of somewhat different preparation. Ex-

ceptionally well qualified teachers may handle both groups but broadly speaking the industrial arts teacher should have as a minimum a fair trade or technical background coupled with very good professional training but with the trade teacher the conditions should be just the opposite—he must first of all be a recognized expert in his trade, and he should then also have as a minimum fair professional training.

Relationship between Industrial Arts and Vocational Industrial Education.—In the preceding paragraphs we have pointed out some of the differences between industrial arts and vocational industrial education. But there are also definite inter-relationships that should be kept in mind. Furthermore both are nothing more or less than essential parts of a program of public education that aims to be democratic in practice as well as in theory.

Before vocational education is undertaken there should be a substantial background of general education. Sex, race, and economic status must not be a ground for deviation from this. The responsibility for a good, general education must be kept inviolate. Such elementary education should include the first six years of school, or pupils approximately six to twelve years of age. This elementary period of education should, whenever possible, be followed by a junior period embracing grades seven to nine inclusive. Theoretically it would be desirable to have all pupils finish at least the eighth or ninth school year before specialized vocational education is undertaken; practically we are not wise in adopting such a policy until the schools can offer to boys and girls equivalent, as distinguished from literally equal, educational opportunities following the sixth school year. Vocational education is being given to boys and girls fourteen and fifteen years of age, not because it is the ideal thing to do, but because it is, in some instances, the best that can be done under the circumstances.

Naturally we should strive to provide a rich curriculum for grades seven, eight and nine—a good junior high school curriculum with provision for industrial arts education. It is in these grades that the major emphasis on industrial arts educa-

TABLE III. COMPARISON OF INDUSTRIAL ARTS AND VOCATIONAL INDUSTRIAL EDUCATION

	Industrial Arts Education	Vocational Industrial Education
Aim and objective	Exploratory and developmental experiences	Specific preparation for a given vocation—Vocational proficiency
Age of pupils	Elementary: six to twelve years Junior: twelve to fifteen years	Above fourteen years of age—Best results with boys sixteen to eighteen years and above
Time allotment per week	A minimum of two clock-hours per week in grades seven, eight, and nine	A minimum of one-half of each school day or usually fifteen hours per week of shop instruction (evening and part-time classes for shorter periods)
Teacher qualifications	Experience in teaching adolescent boys. Trade experience desirable but not always essential	Must be expert tradesman at least six years of trade experience plus some professional training
Skill	Manipulative skill less important than development of reasoning and exploration through shop and laboratory work	Trade skill very important
Equipment	Frequently quite inexpensive, and not too large or heavy—suited for light work	Should measure up to actual trade requirements usually relatively expensive
Reimbursement	Not reimbursable from federal funds (Smith Hughes)	Varies among the states, but expenditure is reimbursed in some form from federal and state funds in nearly all states

tion needs to be placed; it is here when boys should have a chance to do shopwork, when they should take inspection trips to industries and should through all available means get a glimpse of the big work-a-day world in order that they may be thinking in terms of a life career and may have some basis for making at least a partial vocational choice.

Industrial arts education, then, is essentially a part of general education that forms a necessary general foundation and background upon which specialized vocational education may be built. It is the connecting link between broad, general education on the one hand and narrower specialized education on the other.

OBJECTIVES OF INDUSTRIAL ARTS EDUCATION

Meets Instinctive Desires.—In grades seven, eight and nine we are dealing with boys approximately twelve to fifteen years of age. The desire to use tools and to "make things" is almost an inborn characteristic with them. The impulses to learn through doing and to achieve through the use of the hands as well as head should be used as vehicles for instilling wider interests, keener appreciations, deeper knowledge and greater skill. To deprive boys of this age of the opportunity to learn about materials, processes, design, and to plan and make things with their own hands is akin to depriving them of play; for at this age shopwork is as refreshing and as interesting as play to them. There are plenty of instances on record where boys have gladly given up playtime in order to work in the industrial arts shop under the guidance of an inspirational teacher—one who has the insight and the wisdom to nurture these natural desires to plan, sketch, and construct things. It is indeed unfortunate when industrial arts instruction is made so artificial and so formal that the boys lose interest—lose it perhaps not to regain it in a lifetime.

Closely associated with the desire to make things is the desire to find out how things are made. This will suggest the advantage of making it possible for boys of junior high school age to find out just how raw materials are changed, step by step into

objects of great use and beauty. To this end reading, pictures, study, inspection trips and discussions are all supplemental to school shop instruction. The natural desire on the part of youth for information as to how the work-a-day world does things is a valuable asset. Would it not be splendid if every boy twelve to fifteen years of age could have the advantages of a curriculum that includes industrial arts education? Would it furthermore not be fine if the investigative, problem-solving attitudes, so characteristic of the junior high school age, could be maintained by men and women throughout life?

Provides Exploratory and Try-out Experiences.—Life is becoming increasingly complex. The phenomenal development of science and invention in the field of industry, together with the accompanying and ever increasing specialization of man's work is making it more and more difficult for young people to decide upon a vocation. It is indeed difficult for young men and women to decide upon the life career for which they are best fitted by natural endowment, interests and capacities.

It is but natural, therefore, and in keeping with the guiding objectives of the whole junior high school curriculum that for many the major objective of industrial arts education in grades seven, eight, and nine will be exploratory and try-out experiences.

The curriculum should be as rich and as broad as possible in its offerings so that pupils will have the opportunity to sample and try-out, under the guidance of the teacher, different kinds of activities that are typical of modern industrial practice. To be sure school shop conditions do not exactly duplicate the actual ones found in industry but perhaps that is, for boys of tender years, a blessing in disguise. The time will come soon enough when the time element and the urge for production may replace opportunities for self-analysis, try-out experiences and reflective thinking.

Furnishes Opportunities for Mental and Physical Development.—Investigation through reading and study, observation, and participation in typical activities representative of present-day industrial activities of man can be made to con-

tribute largely to the mental and physical development of twelve- to fifteen-year-old boys. Education is not the synonym for acquired facts. Real education is life—it is furthered by purposing, planning, executing or doing, and judging or evaluating the resultant product. What finer opportunities for development could a junior high school boy wish for than those that can be provided by means of industrial arts education? What is more interesting, stimulating and energizing to such a boy than to work with those charming and almost magic tools, and with those attractive materials that grown-up men use in the wonderful things they make? Industrial arts education stimulates interest in human affairs; it challenges the imagination; it opens up new fields of inquiry, and it provides helpful constructive opportunities for self-expression and development through participation, such as every normal boy loves—and all boys ought to be able to enjoy.

Develops Appreciations.—Success in life—and we all want to be successful in whatever we undertake—depends to no small extent upon having an appreciative understanding of what other people are thinking, striving for, and accomplishing. Twenty-five years ago most boys had definite homework to do, such as carrying wood and water, feeding animals and doing innumerable other things. Today that is less common. It is frequently a real problem to find suitable work for boys living in urban communities. Respect and appreciation for honest labor are best developed through actual participation. Nothing can quite take the place of actual experience. A man who has himself dug a ditch, plowed a furrow, built a garage, welded a tie-rod, repaired an engine, or plastered a ceiling will always respect and appreciate such work when well done by others. The school shopwork carried on by boys in the junior high school industrial arts shop is of course limited both in range and in point of time given to it, but is sufficient to develop, to a worth-while extent, a sound respect for honest labor. It should give an appreciative understanding of what hundreds and thousands of men and women are doing in the world's mills, factories and workshops. This will be an asset in life no matter what the boy's future career

will be. A doctor and a lawyer can capitalize upon it as well as can an employer of labor.

In addition to this, industrial arts education, in the grades under discussion, can be made to contribute to the development of appreciations that are well termed consumer's or utilizer's appreciations—a knowledge of what is appropriate and good in the many things we buy for consumption. Among these are food, clothing, utensils, and shelter. A boy who has had some experience in hand composition will appreciate good printing; if he has built furniture it will help him to appreciate similar things made by others, and so the boy's appreciations are developed. He chooses more carefully and tastefully, and he buys more wisely and economically. Gradually he comes to the realization that life is a cooperative effort—an experience in which we have much in common with many people. This viewpoint thus early developed has considerable social, civic and economic value.

II. TYPES OF INDUSTRIAL ARTS ORGANIZATION

In order to bring out more concretely the distinctions between industrial arts education on the one hand and vocational industrial education on the other there follows herewith a somewhat detailed though not an exhaustive presentation of various types of school shop organization as used in industrial arts education. It should be kept in mind that the discussion, unless indicated to the contrary, relates to industrial arts education of junior and senior high school grade.

The Unit Shop.—Most industrial arts education from approximately the seventh grade up is today being given on the unit shop plan. This means that the instructor handles one type of shopwork, such as woodwork, or metalwork, or electrical work, instead of a variety of these. There are distinct advantages in the unit plan of organization and there are also disadvantages under certain conditions that will be mentioned shortly. The term "unit shop" as used in industrial arts education has by no means the same meaning as the term "unit trade shop" as used in vocational industrial education. In the

case of industrial arts instruction it means, as has just been indicated, that the instructor gives instructions in one kind or type of shopwork—on a try-out, exploratory, non-vocational basis. The instructor of unit trade education on the other hand, while he also devoted his efforts to but one kind of type of shopwork, aims to give specific trade training that shall fit individuals, in whole or in part, for wage-earning employment.

Series of Shops.—If pupils are to receive try-out and exploratory instruction under the unit shop plan in a variety of types of instruction there must be provided a series of unit shops through which the learners may rotate. It can therefore be readily seen that unit industrial arts shops ought to be conducted only where there is sufficient enrollment to warrant a number of shop teachers. On the basis of a single teacher handling sixty pupils per day or three hundred per week it requires an enrollment of about nine hundred eligible pupils to warrant establishing three unit shops. Some districts would start them with a smaller enrollment—perhaps as low as four-hundred fifty pupils on the expectation of rapid future growth. Other districts would want to see an enrollment of at least nine hundred before they would start unit shops. Such districts would handle groups of four hundred to nine hundred in modified general shops.

The One-Activity Shop.—The unit shop is also called the "one-activity shop." When manual training was introduced in the United States about fifty years ago the shop instruction in many places was limited to one or two activities. We still have many such shops, especially in the smaller towns, where but one or two shop activities are taught. Evidently this is something that should be modified as quickly as circumstances permit. A series of single activity or unit shops through which the students may rotate is very desirable but a single one-activity shop is too restricted in scope to meet modern demands.

With a small expenditure of funds our one-activity manual training shops can be made to serve a broader purpose by changing them into either general shops or modified general shops.

The General Shop.—The term "general shop" in industrial arts education refers to a shop so organized, equipped and manned that several distinct kinds of industrial arts training are given to a group of students by one teacher. A typical general shop may have equipment to take care of, let us say, ten students in general woodwork; five in general metalwork and five or more in electrical work. From the standpoint of guidance and giving an appreciative insight, through manipulative work, into what man is doing in the many industrial pursuits basic to human welfare and progress, such a general shop is without doubt superior to the traditional wood shop when the instruction was limited to woodwork only. Wood is a very desirable material for shop instruction—perhaps the best single material. But in this day and age our interest may center in other materials quite as much and certainly we should be familiar with various kinds of materials, processes and design covering a range of different industrial activities.

Since the term "general shop" is coming into common use in the sense in which it has just been defined it is especially desirable not to confuse the term with such terms as "general wood shop" and "general metal shop." In the latter two instances an entire shop is devoted to woodwork or metalwork that is general in character. A general metal shop may have a forge or furnace, some lathes, bench tool equipment, sheet-metal equipment, and so forth. It is not a machine shop, not a plumbing shop, not an auto shop and not a sheet metal shop. It is just a *general metal shop*, but not simply a *general shop*.

Misunderstanding is also likely to arise from confusing the term "general shop" with "general industrial school" as used in the National Vocational Education Act of 1917. The latter type of instruction is explained in some detail under "Kinds of Vocational Industrial Education." For our present purpose it will suffice to say that the general industrial school is intended to be vocational in character and therefore differs in many ways from the general shop.

The General Shop in Rural Districts.—There are many reasons why boys living in rural districts ought to be able to

enjoy the benefits of industrial arts education. Through the lack of sufficient funds, lack of shop space in rural schools and because of the small unit of administration, industrial arts education has developed less rapidly in the smaller places than in urban centers of population. The development of the general shop, however, is making it easier to give to country boys the exploratory, try-out, and guidance training along industrial arts lines that they so much desire.

Where vocational agriculture is taught in the public schools one usually finds construction and repair work for prospective farmers given under such captions as "farm shopwork" and "farm mechanics." These types of training should not be confused with industrial arts education for they are quite distinct in purpose. "Farm shopwork," so called, is vocational and is reimbursable under the provisions of the Federal Vocational Education Act pertaining to agricultural education.

It is perfectly feasible, however, and highly desirable that both industrial arts education and shopwork on a vocational basis should be given to boys of junior and senior high school age living in the open country.

The general industrial arts shop, with slight modification, can be made to suit both types of instruction very well. Surely, in the interest of the farm boy, such developments lie immediately ahead of us. If our slogan shall continue to be "keep the farm boy on the farm" then we may not welcome the introduction of industrial arts education for fear that it might lead some boys toward industrial pursuits, but we believe that every father and every fair-minded person will want rural boys to do the things for which they by nature and training are best suited. Neither farming nor any other vocation is going to prosper by trying to fit square pegs into round holes.

A program of shop training whereby boys in rural districts could get a minimum of two hours of industrial arts training in grades seven and eight, or seven, eight and nine, such training to be given in a general shop, this followed in the senior high school years by construction and repair work selected because

of its value to farming and that followed by instruction in farm machinery, would seem to be something worth striving for.

The Modified General Shop.—In the one-shop-teacher school the general shop is to be preferred. When the number of pupils eligible for shop instruction becomes large enough to require two teachers then the general shop may well be changed into what, for lack of a better name, is called a modified general shop. Such modified shops are formed not alone in small cities but also in more or less sparsely populated sections of cities of considerable size. One quite obvious advantage that the modified general shop has over the general shop is that when two teachers are available each has to handle only two, or at most three, activities to provide training in from four to six types of instruction. This is certainly easier than having one instructor handle four shop activities exclusive of mechanical drawing, as is desirable in the general shop conducted in the one-shop-teacher school.

In the two-teacher modified general shop situation it is desirable to have the two shops joined by an opening at least six feet wide by seven or eight feet high. Doors can be provided and will usually be found desirable. At the same time easy access may thus be had from one shop to the other.

The modified general shop is the logical stepping stone between the general shop and a series of unit shops.

Shopwork in the Senior High School.—If the choice has to be made between providing industrial arts education in the junior high school years or in the senior high school, it had better be first provided for grades seven, eight and nine for it is in these years that try-out and exploratory experiences are most needed, and when the introduction of shopwork will mean much toward counteracting the prevailing tendency to quit school in order to seek employment at the minimum age permitted by law. Fortunately, however, it is often possible to give shop training on an industrial arts basis to both junior and senior high school groups. In the senior high school years a tentative partial choice should have been made by pupils so that they elect either the general, the commercial, the technical, the vocational or other courses that may be available.

Shop facilities for the vocational industrial groups must be provided if special subsidy is expected in accordance with the provisions of the State Plan for Vocational Education, so one sometimes finds that such courses are given priority over industrial arts courses. There are many other reasons that can be advanced to justify this practice. But, naturally, the boys who elect the technical or other courses also ought to have shop training, though less intensive in character. They want the instruction given from the standpoint of either general education or as pre-vocational training for a technical or professional career.

The Technical High School.—Is technical high school shopwork vocational? The instruction is often of a high order. The instructor may be very competent vocationally and professionally and the pupils are certainly above the average in native ability, both mentally and as regards technical skill. Why, then, distinguish between a technical high school or class and a vocational trade or industrial school or class? It has been found in actual experience, though there may be exceptions to this, that a low percentage of those who finish technical high schools get into trade work. The number has been reported as low as five per cent. The pupils from these schools are most likely to get into some phase of professional work of various kinds, and often the graduates aim to enter engineering or scientific courses in college. Federal and state funds used to promote vocational industrial education are intended, clearly, to promote only trade and industrial courses of secondary or less than professional grade. This does not mean that technical training leading toward the professions is not desirable but does mean that the two types of training must be distinguished from one another because they differ in purpose and because they may be financed from different sources as regards state and federal funds.

The technical high school may find one of its greatest vocational opportunities in the field of unit technical courses. For instance, specific worth-while training may be given for chemical laboratory workers; to various types of inspectors who need a technical background; to those desiring training in special branches of drafting such as structural drafting, boiler lay-out

or heating and ventilating design and lay-out. Instead of attempting to qualify its graduates for vocational industrial pursuits of less than college grade the technical high school might to better advantage prepare its students for the junior engineering field. Some communities have for some years past organized their technical high schools along the lines just indicated and a new industrial and commercial education bill is now before Congress. This bill provides for specific technical occupational training.

Straddling the Fence.—It would seem that the technical high school ought not to "straddle the fence" by allowing its curriculum to be determined by the entrance requirements of the liberal arts schools or colleges to the extent that it will seriously weaken the functions that it can best perform—namely to prepare its graduates to enter directly, without further training, pursuits in the junior engineering field or, on the other hand, to prepare them for entrance to technical schools and colleges of post high school grade. In addition to this it is feasible to have within the bounds of the larger technical high schools vocational industrial departments operating in accordance with the National Vocational Education Act. Why, for instance, should all boys in a given technical high school get six, eight or ten hours of shopwork per week irrespective of whether or not they will follow mechanical trades? Would it not be better to require those who want to enter trades to get the fifteen hours of shopwork per week required in unit trade classes and have others who obviously will not need such intensive trade training get even less than six hours per week?

Summary.—In these modern days when curriculum changes are often brought about rapidly, and when new subjects have been added so that one must keep on his toes, figuratively speaking, in order to keep up with developments, it is particularly desirable to understand the relationship and the points of departure between industrial arts education and vocational industrial education. The broad, inclusive term "practical arts" includes instruction such as the following: manual training, industrial arts, mechanic arts, home mechanics, household arts,

general agricultural, general commercial and similar forms of non-vocational education.

The corresponding broad, inclusive term covering the four distinct types of training of less than college grade that seek to fit for profitable employment in the fields of agriculture, commerce, homemaking and trades and industries is the term "vocational education." The latter term, therefore, is broader than "agricultural education" or "industrial education" just as the term "practical arts" is broader than "industrial arts." We must learn to differentiate very clearly between practical arts education and vocational education. It may be true, in a sense, that all education is vocational but at best that can be true in many instances only in a most vague and indirect sense. In terms of immediate objectives, in terms of teaching methods and technique—not to mention equipment, teacher qualifications and other important factors, there most certainly are clear-cut differences between these forms of education that we cannot afford to ignore nor brush aside with the easy statement that all education is vocational. We furthermore cannot afford to ignore the differences between vocational education of secondary grade and of college grade. To assume, for instance, that a general curriculum in high school is vocational for all or even the majority of those who complete its requirements is a serious fallacy.

QUESTIONS AND PROBLEMS

1. State in your own words the difference between manual training and industrial arts education.
2. What are the major differences in aim between industrial arts and vocational industrial education?
3. What is the difference, if any, in the commonly accepted use of the terms "industrial art" and "industrial arts?"
4. What is meant by elementary industrial arts?
5. Compare as to purpose the general industrial arts shop and the general industrial school.
6. Why is it desirable to develop appreciations through industrial arts instruction?
7. When grading industrial arts projects should behavior or shop attitude be a factor in the mark?

8. Should pupils be allowed to take home personal projects as soon as completed?

9. Is it legal to charge pupils for materials and supplies?

10. Can a teacher force pupils to purchase overalls or shop aprons against their wish?

11. Should power machinery be used by boys of junior high school age? What machines are most dangerous?

12. Distinguish between a unit industrial arts shop and a unit trade shop.

13. Make a list of the valid aims of industrial arts education, arranging them in order of importance.

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CHAPTER V

KINDS OF VOCATIONAL INDUSTRIAL EDUCATION

What Is Industrial Education.—It is as difficult to define "industrial education" as it is to define the more inclusive term "education". In terms of chronological age, industrial education, as the term is used in the national vocational education act, in the various state plans for vocational education, and in this manuscript, is designed for those over fourteen; in terms of academic standards it refers to training of less than college grade, and in terms of objectives or outcomes it includes those forms of vocational education that contribute definitely to occupational competence in the wage-earning callings in manufacturing and mechanical pursuits—the so-called trade or industrial occupations. It embraces occupational training for a half hundred or more callings such as mining, photo-engraving, oxyacetylene welding, printing, tailoring, bricklaying, machine shop practice, painting and decorating, and a host of others, all of them outside of the field of the professions such as law, medicine and engineering.

The term "industrial education" is sometimes used in a very broad way, just as is the term "industry"—the latter being made to include, at times, all types of vocations such as agriculture, mining, fishing, and manufacturing. In this broad sense industrial education includes shop instruction given on a pre-vocational basis, and shop training given in technical high school curriculums. Such a broad use of the term is likely to lead to misunderstanding and is not conducive to exactness in expression. It is therefore best to use the term in the strict, narrower sense in which it is used in the national vocational education act where industrial education is regarded as that form of vocational education that aims to give training that prepares

persons definitely for wage earning in trade or industrial pursuits. In this restricted sense the term "industrial education" means the same as "vocational industrial education."

State Plans for Vocational Education.—In discussing the various forms of vocational industrial education it should be kept in mind that the various states have their own state plans for vocational education that are drawn up in conformity with the provisions of the national vocational education act of 1917 (the Smith-Hughes Act) and the rulings and interpretations of the Federal Board for Vocational Education. A few states had a state program of industrial education and a state plan for such education before the national vocational education act of 1917 went into effect. In one sense a state plan for vocational education may be more comprehensive than the agreement or contract between the State Board for Vocational Education and the Federal Board for Vocational Education known as the "State Plan for Vocational Education." The state may provide funds not matched by federal funds, to be spent in accordance with standards that the state alone may establish. This is sometimes done and thus the state plan may cover features not involving federal cooperation and not included in the state plan for vocational education, meaning by that the written contract between the state board and the Federal Board for Vocational Education.

Although the staff of the Federal Board of Vocational Education has been of great service to most, if not all, of the states in assisting them to draw up the state plan, and although a brief outline of suggested topics arranged in a logical way is sent to the states, that does not mean that all state plans are alike. Nor does it mean that the Federal Board for Vocational Education draws up the plan. The outline for the plan is sent out in order to secure a certain amount of desirable uniformity of treatment so that any given plan may be examined with a minimum of effort, and also to assist in having the state plan cover items essential to the contract.

A state may seek national aid for all of the six types of in-

dustrial education provided for in the federal act or for such part of them as it desires.

National Aid for Six Types.—The national vocational education act provides national aid for six distinct types of trade or industrial schools or classes: (1) General Industrial; (2) Unit Trade; (3) Evening Industrial; (4) Part-Time General Continuation; (5) Part-Time Trade Preparatory; and (6) Part-Time Trade Extension. Each of these is simply mentioned here and will be dealt with more fully later.

General Requirements.—Certain requirements apply to all six of the above-named types of industrial education and originate from the specific requirements of the national vocational education act.[1] They are:

1. Public Supervision and Control.—The instruction must be under public supervision and control. This means that the instruction must be given as a part of the public program of education—under the auspices of local, county, district or state boards of education. There need be no fear that this may imply that school authorities desire to exercise unnecessary detailed supervision and control over industrial establishments that wish to cooperate with the public schools in organizing and maintaining trade instruction in such industrial establishments. The legal provision is intended only to safeguard the proper use of the funds that are granted for certain specific purposes enumerated in the act. The instruction may be given wherever there are proper facilities, not necessarily in public schools. Representatives of the public schools must satisfy themselves that the instruction given meets all of the requirements of the state plan for vocational education.

2. Instruction of Less Than College Grade.—This means that the trade or industrial education given must be of less than professional grade—it must be trade rather than college training. It means that the instruction is for trade and industrial pursuits such as those in the building, metal, printing and manufacturing trades as distinguished from such professional call-

[1] Federal Board for Vocational Education, Bulletin 1, Revised 1926; and Bulletin 17, Revised March, 1929, Chapter IV. Washington, D. C.

ings as law, medicine, dentistry, and engineering. As a rule there is little difficulty in drawing the distinction between vocational education of secondary grade which prepares for wage-earning employments and vocational education for the professions; but there are always border-line cases that are difficult to classify to the satisfaction of persons charged with the promotion of secondary education as well as those interested primarily in education of college grade. One basis for classification is that courses of college grade are to be considered those for which the better colleges will grant college credit. Another basis for judging is whether or not the successful pursuit of the subject or calling does or does not presuppose graduation from a four-year accredited high school.

The fact that vocational education of college grade does not come within the provisions of the national act of 1917 is not to be taken to mean that such education is not worthy of public support. It may be recalled that national aid was made available to teach agriculture and the mechanic arts on a college level through the Morrill Acts of 1862 and 1890.[2] It does mean, however, that the subsidy under the national act of 1917 was purposely definitely restricted as to its use for vocational education of less than college grade.

3. The Provisions of the State Plan.—These provisions are based upon the requirements of the national vocational education act of February 23, 1917, and the policies established by the federal board that administers the act. The provisions of the state plans vary. They may meet the minimum requirements of the federal act or they may go beyond them, as the state may desire. The state plan, therefore, is likely to reflect the thought and wishes of both the federal board and the state board for vocational education—the latter being almost universally the State Board or Council of Education acting in the capacity of the state board for vocational education. The federal board has, ever since it has been organized, submitted to the

[2] Cubberley, Ellwood P., and Elliott, Edward C., *State and County School Administration*, Volume 2, Source Book, pp. 86 and 96. The Macmillan Co., 1915.

various states an outline to be used in making up the state plan. The chief purpose of this outline, as has been mentioned, is to secure the same sequence of treatment of essential data. The following general requirements of state plans must always be met to the satisfaction of state and federal officials charged by law with supervisory responsibilities:

(a) Plant and Equipment.—The plant, that is the housing facilities, and the equipment contained therein must be satisfactory for the purpose for which it is to be used. That is indeed a rather general statement. It does not specify the floor area, the cubic contents, the amount of light nor other essentials. But it is best that no hard and fast regulations governing these things have been established for the country as a whole or even for a single state. Of course there are rather generally accepted minimum standards. These at least must be met. As the matter stands, the state authorities are given desirable leeway in setting up standards. In a large and relatively wealthy district they should be higher than in a small town or district that is struggling along under the maximum assessments for school purposes permitted by law.

Sometimes it is wise to grant temporary approval upon housing facilities that are not quite up to standard in order that the program may be started or while better facilities are being provided, but it is important that it shall be clearly understood that temporary approval will not be indefinitely extended. Anyone at all familiar with industrial education will recognize the handicap that poor housing and inadequate equipment carry with them. This holds especially for communities that start the program with more or less apathy or even opposition on the part of a perhaps small but significant minority.

When thinking in terms of providing adequate housing and equipment it may be well to remember that these need not be in school buildings. So why not see what industry is ready to provide in the way of equipment, housing, instructional supplies, etc.? Trade associations of various kinds are often of great help to public boards of education in such ways. Then too, in more than one instance a public school building that has failed to

meet modern classroom requirements has been remodeled quite satisfactorily for trade classes. For further information concerning housing and equipment see "Shop Layout and Equipment."

(b) Maintenance.—A distinction is usually drawn between equipment which is more or less permanent and materials and supplies which are consumed in use. In some instances, as for example in a trade tailoring class the materials and supplies used during a given year may easily exceed in cost the relatively small equipment. In any case maintenance or upkeep is most important to the success of the instruction undertaken. For this reason both federal and state supervisory officers must be certain that there is provision for a reasonable minimum maintenance for federally and state aided industrial classes. Any community may exceed the minimum if it sees fit to do so, and it is expected that each community will support its program in accordance with its ability.

It is not easy to define in absolute quantitative terms what constitutes satisfactory maintenance. It may be expressed in such terms as: "The school district agrees to supply all necessary heat, light, water, power, janitor and other maintenance service, and to furnish all necessary instructional materials and supplies."

Two trade shops in the same school system, with similar equipment and enrollment, may vary considerably in the cost of operation or maintenance; and both may be doing good work. In one case the instructor will bring into the shop materials secured from industry, thus reducing the cost of instruction; in the other case the instructor will look to the school for all such material, with a higher maintenance cost as a result.

Securing suitable instructional jobs from industry or making a usable product for the board of education is quite different from having pupils bring in scrap lumber or other materials that are not suitable for trade instruction. One may possibly run a satisfactory industrial arts class in sheet-metal work by using nothing but discarded tin cans, but that does not hold for

trade instruction—the materials and supplies must reflect actual trade practice.

(c) Courses of Study.—The probable effectiveness of instruction may be judged to a certain extent by the course of study. Such questions as the following should be asked:

(1) Do the courses meet the specific requirement of the job to be done?

(2) Do they meet the letter and spirit of the state plan for vocational education?

(3) Do the courses make a well balanced curriculum?

(4) Are the courses suited to the ability, maturity, and experience of the learners?

(5) Do the courses have the approval of trade advisory committees and of local and state supervisory officers?

It is the responsibility of the state to show outlines of courses of study in its state plan. These outlines aim to show such essentials as actual and relative time distributions between the following three types of courses in the curriculum: (a) Shop instruction; (b) related subjects; and (c) non-vocational or general courses. The curriculums in all-day industrial schools will include all three types of instruction. Part-time trade extension and evening trade extension classes usually give only those things that are definitely related to increasing vocational competence.

It would be a relatively easy matter for a state to prescribe courses of study, but to what extent is that desirable? Should a local community expect the State to supply detailed courses of study? This will be discussed under "Curriculum and Course of Study Building."

(d) Methods of Instruction.—The state plan for vocational education also provides that the methods of instruction shall be suitable. Several criteria suggested for judging methods of instruction are:

(1) Do the methods of instruction used square with the best trade practice?

(2) Do they conform to accepted basic principles of teaching?

(3) Do they reflect acquaintanceship with accepted special methods of teaching?

(4) Are they suited to the special interests, capacities and vocational aim of the learners?

(5) Do they result in the formation of correct trade habits and skills?

(6) Do they result in the acquisition of the necessary knowledge?

(7) Do they produce desirable attitudes and appreciations?

(8) Is the net result vocational competence and social competence and adequacy?

Industrial education can be most effectively taught by a combination of methods. Professional training for trade teachers seeks to give an acquaintanceship with various methods so that the instructor can select those most suitable for the occasion. One of the most perplexing problems is where to get teachers who are outstandingly well qualified vocationally and who also have the professional training in the art and science of teaching that is held to be necessary.

(e) Qualifications of Teachers.—Each state must set up in the state plan the qualifications that trade and related subjects teachers are to meet. This is determined to a certain extent by the national act, and by rulings of the Federal Board for Vocational Educational. Here again it is only the minimum requirements that the state and federal boards must enforce. The qualifications are usually stated in terms of: (a) trade experience; (b) general education; and (c) professional training. Professional training is usually stated either in terms of the number of clock-hours of such training required or in terms of semester-hours of training demanded.

At least three plans are used in determining the qualifications of teachers. One or more of them may be used in any given city or school district. The plans are as follows:

(a) On the basis of credential.

(b) On the basis of credential plus an oral or written examination.

(c) On the basis of an oral test, a written test and a performance test.

Specific Requirements.—In addition to the general requirements that affect all of the six reimbursable types of industrial education provided for in the National act there are a number of requirements that hold only for specific types of industrial education. These, however, will be presented with the more detailed discussions of these various types of industrial education to be given in succeeding chapters.

Other Types.—In addition to the six types mentioned as being eligible for national aid there are modifications or special forms of them which also come within the provisions of the Smith-Hughes Act. Among these are:

1. Part-Time Cooperative Courses.—These are special forms of part-time classes and are subject to the rules and regulations governing part-time courses.

2. Dull Season Classes.—They also are a special form of class considered as a part-time class because they are operated usually for only a relatively short time. They could hardly be properly classified as a unit trade class as the latter must operate for at least nine months per year.

3. Foremen's Conferences.—When conducted during working hours these conferences are classified as part-time trade extension work, and may be reimbursed accordingly. If conducted during non-working hours, as for instance during evening hours for men employed in the day time, they are classified as evening trade extension courses which also come within the provisions of the national act.

Trade Preparatory Instruction.—The term "trade preparatory" is used to designate that the instruction whether given in day, evening or part-time classes, aims to prepare the person

taking it for a given trade or occupation *at which he is not yet employed.* Thus the instruction in the all-day industrial schools, both general industrial and unit trade, is of the trade preparatory sort for the students are getting ready for jobs they do not yet hold. Another illustration of trade preparatory instruction is the case of a man employed as a machine tender who is taking a course in bricklaying. He too is getting trade preparatory training. Still another example is the woodshop, printshop or trowel trades teacher who registers for an evening class in auto mechanics because he wants to learn how to take care of his car. He too would in that case be taking trade preparatory training.

Trade Extension Training.—The term "trade extension" used in connection with a given type of instruction such as day, evening, or part-time means that such instruction is *supplemental to the daily employment.* Trade extension training is that which is given to persons already employed at a trade or occupation to which the instruction is related. Thus apprentice training is trade extension training. Teaching a man on the job is also trade extension training. A course on the steel square would be a trade extension course for carpenters.

The term "supplemental to the daily employment" is interpreted to mean "supplemental to a man's regular occupation." He might be temporarily out of employment; or he might be working at something else temporarily. The determining factor is his regular trade or occupation.

Mixed and Segregated Classes.—When a class is made up of persons some of whom are taking the work on a trade preparatory basis and others on a trade extension basis the class is called a "mixed" class. The term is used in the terminology of industrial education in a sense opposite to "segregated."

A segregated class is one that is selected on the basis of a given kind of trade or industrial pursuit. The persons who compose the class have a common background of experience that serves as a distinct asset especially in short, intensive training programs such as are given in the evening.

Summary.—Industrial education is that form of vocational education that aims to prepare definitely for wage-earning employments of a trade or industrial nature; or that aims to assist persons already employed in industry to increase their trade or special knowledge and skill. Industrial education is offered to employed boys and girls as well as to men and women. It includes instruction such as is given to part-time continuation students which has try-out and adjustment to vocations as its immediate aim.

Vocational industrial education is conducted, in the various states, in accordance with state plans for vocational education. These state plans usually, if not always, represent the combined judgment of local, state, and federal officials charged with responsibility for vocational education. Since the state has the option of accepting the provisions contained in the national act pertaining to any one or all types of vocational education it so happens that the state plans vary in the types of industrial education that they reimburse from federal funds and in other respects.

Exclusive of teacher-training, there are six types of schools or classes entitled to national aid—provided, of course, that the necessary standards and requirements are met. These types are: general industrial, unit trade, evening industrial, part-time general continuation, part-time trade preparatory, and part-time trade extension schools or classes. In addition to special requirements to be discussed in a later chapter these types must conform to the following general requirements:

1. Public supervision and control.
2. Instruction to be of less than college grade.
3. The provisions of the state plan must be met with respect to:
   (a) Plant and equipment.
   (b) Maintenance.
   (c) Courses of study.
   (d) Methods of instruction.
   (e) Qualifications of teachers.

QUESTIONS AND PROBLEMS

1. Is it possible, in accordance with the provisions of the national vocational education act of 1917, to conduct classes in: (a) industrial establishments; (b) private schools?

2. Make a list of methods of instruction that are suitable to trade or industrial classes.

3. Which of the three methods of determining the qualifications of trade teachers as mentioned in this chapter do you consider to be the best? Give reasons.

4. Evening classes to be reimbursable under the Smith-Hughes Act must be trade extension in character. Why is that the case?

5. What are the reasons for subsidizing general education courses from vocational funds when such instruction is given to part-time classes?

6. How many of the six types of industrial education mentioned in the basic act as eligible for aid are reimbursed in part from national funds in your state plan for vocational education.

7. Explain what is meant by public supervision and control.

8. May a teacher certified to teach a given trade or occupation teach the same in any type of school or class such as day, evening or part-time?

9. Is teaching experience in private trade schools or in apprentice schools conducted by industry considered as the equivalent of experience in public schools for certification purposes?

10. Who is responsible for enforcing the legal requirements of the state plan for vocational education—the teacher, the director, the superintendent or the state supervisor?

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See also the state plans for vocational education as issued by some of the states through the office of the State Director of Vocational Education.

CHAPTER VI

THE ECONOMIC AND SOCIAL VALUE OF INDUSTRIAL EDUCATION

Twenty Years Ago.—In the short span of the last twenty years much has transpired politically, educationally and vocationally. Within that short time transportation has been revolutionized through the automobile and the airplane and airship; communication has been revolutionized through the radio; secondary and collegiate education has grown by leaps and bounds and vocational education is now recognized as an essential part of a democratic program of education. All and much more has taken place in less than two decades.

Not over twenty years ago it was indeed a question of considerable moment with leading educators, business men and industrial leaders whether or not vocational education ought to be a matter of public responsibility. Social and economic factors had much to do with the settlement of that question. When this question was discussed as to whether or not there should be vocational education of less than college grade, given under public supervision and control, public spirited men and women having social welfare at heart were not slow to point out the many advantages that could reasonably be expected to come through such a program as eventually was inaugurated through the passage of the national vocational act passed in February 1917.

Education and Life.—All education to be a vital and dynamic force must be based upon life's needs. To find out what these needs are we turn to various groups. No longer are we satisfied to listen only to the small minority who used to constitute the leadership group. The old type of leadership—of one-man control—is already a matter of past history in a country such as ours. We are listening to the educational sociologist, among others, to find out what shall be the aim of public educa-

tion, and we are getting the points of view of others who know from first-hand experiences what education is needed today. Men and women in industry tell us what can be done to make industrial education more effective; business men tell us what desirable modifications are needed in commercial education; practical farmers advise us on what should go into the agricultural curriculums; experienced homemakers show us wherein the teaching of homemaking can be improved. All education including trade and industrial education is becoming more purposeful and more helpful to our social and economic wellbeing because we are to an increasing extent stating educational objectives in practical, specific terms.

Why Have Industrial Education.—It requires no prophet to tell us that we are living in an industrial age. Evidence of that is all about us whether we live in the city or in a rural district. Fewer men are needed today than ever before to produce our food stuffs, and each year people in larger percentage are entering industrial employment.

About one-third of all male persons over ten years of age who are gainfully employed in the United States are working at manufacturing and mechanical trades or occupations. The per cent who are employed in the professions is so small that it must be startling to those who conceive the main purpose of public education of secondary grade to be preparation for college and for the professions. In the United States as a whole, approximately four per cent of the male persons over ten years of age gainfully employed are engaged in professional pursuits whereas approximately 33 per cent are employed in trade or industrial occupations, as may be seen from the data of Table IV taken from the 1920 federal census report.

Trained Workers Needed.—The social and economic welfare of a people depends not so much upon the numbers employed as upon their degree of intelligence, their skill and training. John Dewey in an address given before the Vocational Education Association of the Middle West has reminded us that the Franco-Prussian war was won, according to common opinion at the time, not so much by the armies as by the school-

TABLE IV. OCCUPATIONAL DISTRIBUTION OF MALES OVER TEN YEARS OF AGE GAINFULLY EMPLOYED

	In the United States	In a Predominantly Industrial State (Pennsylvania)
Agriculture	29.8	10.
Extraction of minerals	3.3	12.1
Manufacturing and mechanical	32.9	43.9
Transportation	8.6	9.7
Trade (commercial)	10.8	9.9
Public service	2.3	1.9
Professional	3.4	3.3
Domestic and personal	3.7	3.2
Clerical	5.1	5.9

masters of Germany. He furthermore pointed out that great wars, for a number of hundred years have been followed by far-reaching educational reorganization.[1]

Was it mere accident that the Morrill Act was passed in 1862 and the Smith-Hughes Act in 1917? Are we now giving educational reorganization more serious attention than before the world war?

The increased competition that has come in recent years can be met to a certain extent by natural resources but in the main it will have to be met, if it is to be met successfully, through education—both general and vocational.

David Snedden has estimated that about five per cent of our population has received definite professional training, and that about six per cent more have received definite training for vocations of less than college grade, but that "*nearly 90 per cent of all the adult workers of America today have been the beneficiaries—and the victims—only of what may be quite accurately called pick-up vocational education.*"[2]

In the past, due to the wealth of natural resources, the inventive genius of the American people, and skilled workers who came to America to make this country their home, we have not felt so keenly as we otherwise no doubt would have the need for

[1] Dewey, John. Bulletin 4, "Vocational Education in the Light of the World War." Vocational Education Association of the Middle West, 1918.

[2] Snedden, David. *Sociological Determination of Objectives in Education*, pp. 281, 282. J. B. Lippincott Co., 1921.

all forms of vocational education including industrial education. Table V has a direct bearing upon this matter. It shows that in 1925 there were approximately 65 per cent less mechanics coming into the United States than in 1905.

TABLE V. MECHANICS AND SKILLED WORKERS ADMITTED TO THE UNITED STATES

Immigrant Aliens admitted to the United States during the fiscal years ended June 30, 1905, 1910, 1915, 1920 and 1925, showing proportion of total number admitted, who were mechanics and other skilled workers, as specified.*

Year	Occupation			Total Number Admitted
	Mechanics†	Other Skilled	Total Skilled	
1905	45,736	134,376	180,112	1,026,499
1910	37,596	100,974	138,570	1,041,570
1915	13,517	42,121	55,638	326,700
1920	17,827	52,140	69,967	430,001
1925	16,143	35,135	51,278	294,314

* From data supplied by the Bureau of Immigration, U. S. Department of Labor.

† Mechanics include blacksmiths, carpenters and joiners, machinists, masons, metal workers (iron, steel and tin), painters and glaciers, plasterers, plumbers, stonecutters, tinners, and mechanics (not specified).

Fewer Workers Needed.—In considering the social and economic value of industrial education we must not overlook the important fact that in industry as well as upon the farm constantly fewer men will be needed to do a given amount of work. Industry is constantly introducing labor-saving devices which throw hundreds and even thousands out of employment. Does this mean that consequently industrial education will be in less demand? On the contrary! If persons thrown out of employment are to readjust themselves to other worthwhile vocational pursuits there should, without question, be specific training that

will enable them to make this change in the shortest possible time.

Mr. William Green, President of the American Federation of Labor, has recently pointed out that a more adequate federal employment service is needed in order that such readjustments may be made without undue hardship upon the workers. He says in part: "Workers displaced by technological changes need special employment counsel and the assistance of vocational training opportunities in order to adapt their abilities to new work without loss of income or lowering standards of living."[3]

Not only will there be a need in the future for fewer workers to produce a given amount of product but those workers will need to be highly skilled in their line. There will be more specialists and a smaller proportion of "all-around" mechanics than in the past. Industrial education must consequently get entirely away from the idea of trying to fit for general work. Each lesson must contribute in a demonstrable way toward some definite, practical objective that actually is to be met by the learner. And it is exactly on this ground of contributing in clear-cut tangible ways to the world's needs that industrial education claims to be of social and economic value to society.

An Economic Necessity.—The need for industrial education is widespread and differs greatly in kind and in extent. For unskilled labor little special training can be given; for semi-skilled employments the needed training may be for a few weeks, a few months or possibly more. So little has so far been done in training semi-skilled workers that we can only guess at the service that may be rendered there. But these "guesses" indicate that it is too important a field to overlook. Now as to skilled workers—they will always be needed—many of them, and they cannot possibly do the work that will be expected of them without thorough training. If we were still living in the Middle Ages, if we still had universal apprenticeship for skilled workers, if we had no appreciable mobility of labor and no keener competition than centuries ago, then we could get along without industrial education given under public auspices. Industrial

[3] *New York Times*, Wednesday, April 2, 1930.

education bases its claims of economic value to society on such grounds as the following:

1. Conserves Human Effort.—As long as man has to work long hours, as do people under frontier conditions, in order to meet the bare necessities of shelter, food and clothing there can be little progress in art, science, music, the graphic and plastic arts and literature. The development of culture as well as suitable homes and happy home life all rest upon work and upon vocational education, for it is through the latter—through definite instruction in the art and science of carrying on the world's work—that man is liberated above the state of practical slavery. It is through the applications of science, through applying ourselves to our work systematically, through our control of natural forces that we are able to conserve human effort so that we have time for reflective thinking, for social intercourse, for participation in work that contributes to the welfare of others in addition to immediate family and friends, for effort that promotes and perpetuates our civilization, and for esthetic appreciation of beauty in its many forms and manifestations.

Conservation of human effort is at the very basis of race progress. Conservation of human effort does not mean restricted effort—it means quite the contrary, it means a controlled, directed expenditure of energy in ways and through means that will produce the maximum good. Through the use of water, steam, gas and electric power, through an almost endless number of inventions we have taken much of the drudgery out of life and it has been largely brought about first of all through developments in the trades and industries that help to form the foundation upon which our national welfare rests.

2. Conserves Natural Resources.—Second only in importance to the conservation of human effort is conservation of the natural resources. In pioneer days we wasted great forests that will never be replaced; we wasted public lands by selling them for a pittance instead of conserving them; we wasted oil, gas, coal, and other minerals with such a wanton hand that now efforts at reclamation are being made. But invention and developments in processes of manufacture here too come to our aid. We

remake old paper and rags into new paper, old rubber into new, old iron and steel into new; and these remade materials are quite suitable for some purposes and conserve natural resources. We are able to save thousands of feet of lumber annually through so simple a device as substituting band saws for circular saws in the saw mills. Building materials are made from the fibers of sugar beets; in the meat packing industries everything is used except the squeal; valuable coal tar products are today washed out of what formerly went up in smoke; valuable nitrates and other chemicals are made from waste products; enduring building materials such as portland cement, asbestos and glass are made from raw materials that in themselves are quite useless to man; artificial silk is made in large quantities from cellulose; cotton cloth has become exceedingly cheap through labor-saving machinery used in its manufacture. In similar fashion we might continue to enumerate many ways in which natural resources are being conserved and point out how waste materials are being utilized to meet our modern demands. But the examples given will illustrate the point that industrial development and the training that is basic to it are fundamental to our economic welfare.

3. Saves Wear and Tear.—Industrial education is of value in that through it persons are taught to use tools, machinery and other equipment in ways so that wear and tear is reduced to a minimum. Just a little ignorance or a little carelessness may result in most serious losses. Frequently the most delicate machines are the most expensive. A wrong move and things of great price may be destroyed.

Industry seeks persons in the skilled trades who have had pre-employment training—persons who at least know something of the basic tools, materials and processes of the work to be done. Vocational industrial education aims very definitely to give that kind of practical, necessary, functioning type of education.

4. Increases Skill.—One of the direct and immediate objectives of trade and industrial education is to produce in the learner, at least sufficient trade skill—be that hand tool skill,

machine operative skill or both—to enable him to be employed advantageously. The school can give the necessary personal attention to learners that will enable them to develop right trade habits that through repeated practice will eventually develop the best workmanship. Today more than ever before it is a matter of relative skill because competition is so keen. If we wish to compete with products made in countries where lower wages prevail we shall need to make a superior article. That, in turn, calls for greater skill in both design and execution. Of course we depend largely upon machines for skill but can unskilled hands make and maintain them? And are there not many instances in which handwork is superior to machine work? Are there not other instances where handwork is more practical than machine work?

5. Increases Trade Knowledge.—Correlative in value with trade skill is trade knowledge, though in some trades and occupations one or the other is of greater importance. Thus in certain forms of electrical work trade knowledge is probably more important than hand skill; in cement finishing the hand skill is perhaps the most essential and yet both are necessary—each supplements the other. Trade knowledge, such as a worker uses in the daily employment at his trade or calling, must not be confused with information of a more general sort given for purposes of vocational guidance or for developing appreciations. The latter have their place and their relationship to vocational competence, but the worker needs something more specific, more detailed, and more technical if he is really to understand the underlying principles of his vocation.

The necessary trade theory or knowledge cannot often be given to best advantage under production conditions. Some of it will always have to be given on the job, but industry wants much of this necessary trade knowledge taught by competent instructors in vocational industrial classes operated by the public as part and parcel of the public school system.

6. Added Trade Interest.—There is a certain disadvantage in having our noses, figuratively speaking, too close to the grindstone. It may be so close that it obscures the most interesting

vision of the product as a whole, of the department as a unit, and of the plant as a service unit. To be sure, industry is organized for profit, but from the consumer's standpoint its primary justification lies in the service that it renders. Likewise, to be sure, a workman is interested in his daily wage—he has to be in order to live—but he also must be of service—indeed wants to be of service and is unhappy in even thinking that the time may come when he cannot be of service.

Industrial education aims to develop job pride, department pride and plant pride by pointing out the part that each man's work contributes toward the service that the industrial establishment or organization as a whole is able to render. It thereby widens the worker's vision, adds to his realm of appreciations, and increases his interest in the work that he does.

The historical background to a trade is also of value in developing trade interests. We are interested in knowing how our forefathers lived and worked, in the tools they used, in the methods of work and in the results of their labors. Industrial education helps to build up such backgrounds of interest in order to develop thinking, creative craftsmen who enjoy their work largely because they have been able to make it stimulating, energizing, creative and of service.

7. More Continuous Employment.—When employment is slack the first to be laid off are the transient and unskilled workers. That is true among individuals as well as larger groups. As soon as a community industry is not able to compete successfully with others it too must either reorganize and increase its efficiency or else close its gates.

That trade or industrial competence is conducive to continuous employment few will contradict. Yet how many there are who will readily subscribe to that point of view and who at the same time wonder whether industrial education is really needed. They are willing to let nine-tenths of all producers learn by the wasteful and consequently expensive pick-up method.

Not only does industrial education help to bring about steady employment but it also results in a finer, a more usable and more lasting product. By making products that wear well we

do not necessarily limit employment. There will be other things that society will want—new goods and services that are not now generally available.

8. Better Standards of Living.—The natural result of conservation of human and natural resources, of reduced wear and tear upon tools and machines, of increased trade skill and knowledge, of broadened interests and of steady employment is a better standard of living—the kind that the American people now enjoy. Does anyone think that it is possible to maintain the present high standard without definite vocational education in all of the major fields? Let him study the industrial history of nations. America, after due consideration and after some years of discussion, has definitely committed itself to the principle that vocational education is necessary to our national welfare and that it shall have national, state and local support.

Does It Pay?—It should be pointed out at the outset that economic consideration is only one of several vital factors to be considered. No one will deny that they are important. But, just to illustrate the financial advantages of having learned a skilled trade, let us take the building trades wage scale in one of the large cities of this country, as given in Table VI.

The average daily wage for eighteen skilled occupations in the building trades is $8.89. The rate for common labor in the same city is $4.50. Figuring, conservatively, that a person is employed 200 days per year and that he is able to work at his trade or occupation for twenty years, the skilled worker, on the average, will earn $34,760. The man employed at common labor will earn $18,000 in the same length of time. The difference in the amount earned (not to mention savings that may be placed at interest) is $16,760. This amount multiplied by the number of skilled workers trained in the United States gives an economic saving that far exceeds the total cost of the entire program of industrial education. Now let us ask the question: "Does it pay to serve an apprenticeship or does industrial education pay?"

But the financial advantage, great though it may be, is only one of many. The skilled worker is engaged, all his life, in work that is stimulating and energizing. He grows in capacity

TABLE VI. COMPARATIVE WAGES IN A LARGE CITY

Occupation	Rate per day
Labor, common	$4.50
Bricklayers	10.00
Cabinet workers, outside	8.00
Carpenters	8.00
Cement finishers	8.50
Electrical workers	8.00
Glass workers	8.00
Iron workers (bridge and structural steel)	10.00
Marble setters	9.00
Millwrights	8.00
Model makers	9.00
Painters	8.00
Plasterers	10.00
Plumbers	9.00
Sheet-metal workers	8.50
Steam fitters	9.00
Stone cutters	8.00
Stone setters	8.50
Tile setters	9.00
	$156.50
Average for 18 skilled occupations	$ 8.69

in the service that he can render. His income, if carefully handled, will provide for modest everyday needs and for the inevitable "rainy day" so that his family can be properly clothed, fed and sheltered. He has more time for self-improvement and for community service.

It may be argued that the figures quoted are not fair in all respects. For example, it is not necessarily true that a man once employed at common labor will continue to be so employed. That is fortunately true, but it must likewise be granted that the skilled workman has better opportunities to rise vocationally than the man who is unskilled so there are opportunities of

growth in both classes of occupations mentioned, with the advantage in favor of the skilled workers.

A Cooperative Affair.—The average employer does not find it profitable to give industrial training at his own expense. Large corporations may find it worth while—especially if they train persons in special lines of service that will continue to contribute to the company's business even after the employee leaves. But the average employer cannot afford to train men for his own plant—not to mention for his competitors. What then, is the solution?

Cooperative buying, production, and marketing have demonstrated their worth. So has cooperative industrial training where it has been tried. In addition to the consumer or the general public, three groups of persons may well be involved in industrial training—the employees, the employers, and the public schools. The employer can best provide certain parts of the training; the public schools, through their vocational departments, can supplement this effectively; and the employees should also have their share in making the training program a success.

A Community and State Enterprise.—All who will enjoy the direct benefits resulting from a training program should participate in it. In the last analysis, what is best for the individual is also best for the state, and what is best for the community is best for the individual members who compose it. Industrial training should be undertaken as a community affair—one in which all assume their respective shares of the burden. And since the state and the national government also profit through such plans, they should be given the opportunity to participate financially in accordance with the state plan for vocational education, as set up by the state departments of public instruction in the several states.

The Social Value of Industrial Education.—Industrial education in its various major types, namely, all-day, part-time and evening education, is devoted to the express purpose of giving persons the necessary knowledge and skill that will enable them to do the things for which their particular interests, capacities and aspirations best fit them; it therefore is a direct

means of real individual happiness and social welfare. From a social point of view, man's chief function is to sustain, to perpetuate and to add to the best in modern civilization. Each one of us must do that in his own way, depending upon his native capacity, his environment and opportunities. Obviously this cannot well be done through academic education alone. Life has become so complex and so varied and exacting in its demands that it is foolish to think that we are serving society best by adhering to academic education to the exclusion of industrial or any other form of vocational education. Industrial education serves a great social purpose in that it conserves and develops the natural resources of youth, and adds to the abilities of adults to be of maximum service in furthering the things that are most worth while. Any state or city program of education that does not provide for vocational education results in a two-fold social loss. In the first place, there is a social loss to the individual in that his powers for service are inhibited and curtailed; and in the second place, there is the social loss to the community caused by this individual's inability to do his best.

One of the ways whereby we may save ourselves much disillusionment and vain regret is to teach every boy and every girl some form of useful work, and to transfuse such instruction with social purposes.

Manual Activity a Vehicle for Socialization.—Industrial education, through its manual activities, and through the opportunities it affords for constructive exploration and manipulative discovery, makes a strong and direct appeal to young people and to adults. It therefore offers a fine approach to instruction that will make for good citizenship. Such attributes as: conscientiousness, perseverance, self-restraint, and devotion to a strenuous life of service are broad in their applications, and hence are not limited to the school shop where they may, in part, be developed.

Conscientiousness may be taught through ideals, through the standards of workmanship, and through the quality of the materials that are accepted in a given article that is made. Prac-

tical work offers a fine opportunity to show how inferior and undesirable makeshift and imitation things are compared with genuine goods and true values.

Perseverance, though it has its physical aspects, is largely governed by one's attitude of mind. It can be stimulated and strengthened through rewarding it by expression of appreciation or otherwise. The objective nature of practical work makes it easy for the learner to see for himself just how much perseverance he has toward accomplishing the tasks that are to be mastered with a certain degree of skill and that are to be completed in a specific time. If the problems or the tasks set for him are not too difficult, and yet hard enough to cause him to exert his best efforts he will be proud of his accomplishments, and he will incidentally grow in perseverance. The mental attitude of always wanting to see things through to the finish is one that is fundamental to a life of service.

Self-restraint becomes more and more essential as civilization grows increasingly complex. What finer chance is there to learn proper self-restraint than through manual activity—both work and play?

Moral Values.—Normal family life with all that it carries with it in hopes, plans, strivings, and achievements is the bulwark of our nation. To make family life happy we need to work by the sweat of our brows, for it has been well said, "except ye work, ye die!" We should also have time for leisure and recreation, such as are more accessible to a person having a skilled trade than one not so fortunate. The relationship between normal family life and dependency, and the relation between dependency and uskilled labor, may be inferred from the following: "Dependency is more or less associated with the lack of normal family life. Out of every one hundred male paupers, only eleven per cent are married. The great majority of the males are recruited from the ranks of unskilled labor."[4]

Vocational activity has positive social and moral values. We

[4] Dr. Ellen C. Potter, formerly Secretary, Pennsylvania State Department of Welfare.

need to do something constructive whether we are financially well-to-do or not. An examination of reformatories and prisons will convince most of us that ignorance and idleness (frequently forced idleness through lack of vocational skill and knowledge) are closely associated with waywardness and that a life of devoted service—a busy life with social objectives in mind—is usually a happy one.

Earning a Living and Living.—The social welfare of an individual, as of the family and larger social units, depends upon two things—earning a living and living. Industrial education helps people to earn a living and also helps to provide the time necessary for family and other social responsibilities. As time goes on we shall come more and more to the conviction that it does not pay to let people "steal" a skilled trade or get it in the school of hard knocks by the "pick-up" and "trial and error" method, for such methods are exceedingly wasteful, inefficient, and expensive to the consumer as well as to the worker.

Outcomes of Socialized Industrial Education.—By socialized industrial education is meant a program of industrial education that goes beyond training given only from the point of view of making an expert craftsman. It refers to a program of instruction that recognizes and provides, along with trade training, instruction in economic and social problems that are met in daily life; it transfuses manual activities with social ideals and purposes; it helps to give a proper perspective of personal privileges as well as of the rights and welfare of others.

Among the legitimate results or outcomes of socialized industrial education, we may expect to find the following:

1. It will build up a social point of view concerning relationships to family, community, state and federal government.
2. In the process of developing vocational competence it will reinforce and strengthen the learner's general education. Both are necessary.
3. It will help to develop and strengthen the learner's conscientiousness and moral ideas.

4. It will assist in adjusting the individual to successful participation in the world's work.

5. It should result in better citizenship.

The Humanitarian Demand.—According to figures furnished by the Metropolitan Life Insurance Company, 95,000 persons were killed and 10,000,000 persons were injured in accidents in this country in the short space of one year. Now training cannot prevent all of these accidents but it can materially help. Training in safety is a part of any good program in industrial education. It is a matter of record that after courses in mine ventilation, mine timbering, and other matters affecting the welfare and safety of miners were introduced in one state, the state secretary of mines pointed out that there had been a decided reduction in accidents and injuries in the mines, and he attributed it largely to the vocational instruction the men had received.

Another great field of humanitarian service deals with the rehabilitation of the handicapped. Industrial rehabilitation of persons injured in trade and industrial pursuits deserves public support for it enables handicapped men and women to become once more self-respecting, self-supporting members of society.

National Welfare.—Industrial education is just as essential to national welfare as to individual and community wellbeing. Our country could not long exist without a body of intelligent, skilled workers. National welfare is nothing more or less than family welfare on a large scale. If industrial education is socially, economically, morally and politically desirable for the family so is it also for the nation. The federal government therefore not only has an interest in industrial education but it has a clear-cut responsibility which it has recognized and accepted through the Federal Vocational Education Act of 1917.

Pride in Craftsmanship.—Along with specialization in industry has come an apparent decline in the pride men take in doing work well, partly for the satisfaction that comes from the knowledge of something well done. With the decline of job pride or craftsmen's pride comes loss of interest in work except

as it may result in pay. Thus the dollar becomes the motive. This often results in dissatisfaction, for normal human beings should get more out of their work than pay. It is believed that the happiness or satisfaction that we get out of most things we do depends largely upon how well we do them. No wife can take pride in making a soggy pie; no farmer takes as much pride in scrub cattle as in purebred stock he may raise; no real craftsman takes pride in poor workmanship. Long after wages and all other details are forgotten there remain the telltale evidences of his work—either good or poor. Vocational education, since it develops vocational competence, makes a contribution along this line that must not be underestimated—it produces satisfaction in work that will be a lifelong asset of far-reaching effect.

Labor Turnover.—It has been estimated that the industries of the United States lose annually $200,000,000 through labor turnover. This loss can be lessened a good deal through more careful selection of workers, through analyzing their special abilities or lack of them, and through supplementary trade training given under either private or public auspices. It is the untrained worker that cannot hold his job. Labor turnover is expensive to industry but equally or more expensive to the worker. It directly affects the family budget and perhaps the welfare of the family. One of the worst effects of labor turnover is upon the laborer. If he has to change his job often he is likely to develop an inferiority complex—he will lose confidence in himself, and he is likely to develop an anti-social feeling toward others that will be a real handicap to him and to those dependent upon him.

Summary.—Industrial education finds its justification not alone on an economic basis. Important and absolutely vital as are the economic values of industrial education, it is also evident that economic and social welfare are by no means mutually exclusive, but are interdependent. Labor is at the foundation of all art and science and culture. Industrial education which has as a major purpose the conservation and wise utilization of human and natural or physical resources directly contributes to

individual welfare, to family happiness, to state solidarity, and to national wellbeing.

The part now played by systematically conducted trade and industrial education is relatively small. As the various values of public vocational education conducted along sane lines become better understood there is reason to feel that we shall want to make the opportunities more generally available so that more persons will have the necessary training that will help to make it possible for them to lead lives of maximum usefulness in whatever vocation they may be employed.

The ability to earn a living is at the root of family welfare. Who knows how many homes are broken up because of financial straits? Or who can tell how many young people postpone marriage longer than is best in order to be able to meet modern standards of living? Vocational education impartially conducted under public auspices and wisely administered with due regard to the laws of supply and demand for various types of workers has long since proven a sound investment. It reduces the waste inherent in trial and error learning; it lessens fatigue when work is done the best way; it leads to satisfaction and happiness when persons are taught how to be alert, thoughtful as well as careful and skillful.

QUESTIONS AND PROBLEMS

1. Compare the old type of apprenticeship with modern apprenticeship.
2. What effect, if any, does conservation of natural and human resources have upon social welfare?
3. What is meant by "socializing" instruction?
4. Why is it that there are nine times as many unmarried male paupers as married ones?
5. How may job pride be promoted?
6. What is meant by the "human factor" in industry?
7. If a man by learning a skilled trade can increase his income $16,000 during 20 years, how great would the economic gain be for those who received industrial training under public auspices in your state in one year?
8. How does the total cost of industrial education in the United States in one year compare with amount spent for chewing gum?
9. Is the occupational distribution in a state a fair index of how public funds should be spent for various types of education?

10. Why should public funds be used for industrial education? Why not let industry take care of it?

11. What justification is there for using state and federal funds to promote industrial education in a city?

12. Are the social and economic values of industrial education generally recognized by (a) laymen, (b) teachers of general education subjects, (c) employers?

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CHAPTER VII

THE DOUGLAS COMMISSION

On May 24, 1905, Governor William L. Douglas of Massachusetts approved a Resolve of the Senate and House of Representatives, creating a "Commission on Industrial and Technical Education."[1] On June 7 following, he appointed nine persons to this commission.[2] They represented manufacturing, agricultural, labor and educational interests in the state, and they were given power to secure the assistance of experts and of the necessary clerical staff. The purpose of the commission was stated in the resolution as follows: "The commission shall investigate the need for education in the different grades of skill and responsibility in the various industries of the Commonwealth. They shall investigate how far the needs are met by existing institutions, and shall consider what new forms of educational effort may be advisable and shall make such investigations as may be practicable through printed reports and the testimony of experts as to similar educational work done by other states, by the United States government and by foreign governments."

Here, then, we have appointed by the Commonwealth of Massachusetts a commission charged with the duty of evaluating the then existing forms of education and, further, of looking into the question of whether or not industrial and technical education was needed in Massachusetts. The very fact that the commission was created is evidence that some persons felt that the time had come to take an inventory of what was being done in order to

[1] Massachusetts, Commonwealth of. Report of the Commission on Industrial and Technical Education.

[2] These members were: Carroll D. Wright, chairman; Warren A. Reed, vice-chairman; John Golden, secretary; Mary Morton Kehew, Nathaniel I. Bowditch, Simeon B. Chase, George H. Martin, John P. Murphy, George E. Keith.

determine whether public education was keeping abreast of industrial development, and furthermore that some persons at least felt quite certain that the then existing program of public education needed to be modified in the interests of progress.

This changing conception of education that became evident at this time resulted in added interest in industrial education. This was shown in several ways. Educational leaders and students of social welfare began to feel that it would be desirable to include more so-called practical training in the curriculum than was customary. They were slowly coming to the point of view—the view from which they had drifted with the decline of the old types of apprenticeship education—that it was desirable to give "practical" instruction along with academic instruction. In addition to this there were the people who themselves worked at trade or industrial pursuits and the employing builders, contractors and manufacturers. These felt very definitely the need for training such as was formerly fostered by the old craft guilds. They realized, more clearly than the educators and the sociologists, that the manual training movement, which was fairly well established in the United States by the year 1900, was not serving the purpose of training efficiently for wage earning employments in trade or industrial pursuits. The appointment of this commission may properly be regarded both as a milestone and as a turning point in the development of industrial education. We shall try to show later that the findings of the commission brought to public attention the inadequacy of the educational program then in effect.

It soon became evident that a study of the needs of industrial education could well be resolved into two related and yet separate problems. These had to do with: (a) training for boys and girls fourteen to sixteen years of age who were about to enter employment; and (b) youths and adults who were already engaged in trade or industrial callings. Dr. Susan M. Kingsbury was invited to make a study of youths entering industry and her findings were presented in detail in the report of the commission.

Trade Training Needed.—Significant among the points brought out by the commission was a fact that we have already mentioned in connection with the discussion of Colonial apprenticeship. This was that it had been general practice in the skilled trades to give trade training of a very definite and specific character through apprenticeship training. In other words, the old type of apprenticeship as practiced in the skilled trades was distinctly vocational; it was efficient training; it produced satisfactory results.

While apprenticeship was declining due to: (1) the industrial revolution, (2) the opening of the West, (3) the desire for frontier adventure, and to other causes, the schools in the older states such as Massachusetts were gradually able to extend their claim for increasing length of school terms. It was believed, and properly, that a study of history, literature and other "liberal" subjects was desirable in order that the past experiences of the race, and the best thoughts, teachings, and ideals of men might not be lost, but would serve as guides for future conduct and action. These convictions became manifest in early Colonial times. Out of them grew the demands for free public schools; out of them grew the Latin schools and colleges.

For a time the practical trade training given through apprenticeship and the general, non-vocational education given by the Latin schools supplemented each other quite well. It was a case of each contributing a part of the training essential to a fairly well-balanced program. But with the decline of apprenticeship training and the corresponding development of non-vocational education the time had come when education was almost exclusively academic and distinctly bookish. Out of this grew wrong ideals about manual work; false attitudes toward physical labor; and narrowed, one-sided viewpoints of life that were far from beneficial to development of the best ideals of democratic life.

So it was that when the Douglas Commission met in 1905 it found that "the general public has been strangely blind to the narrowness of the public education."

Manual Training Not Adequate.—Speaking about manual training the commission said:[3] "It has been urged as a cultural subject mainly useful as a stimulus to other forms of intellectual effort—a sort of mustard relish, an appetizer—to be conducted without reference to any industrial end. It has been severed from real life as completely as have the other school activities. Thus it has come about that the overmastering influences of school tradition have brought into subjection both the drawing and manual work."

It cannot be too strongly emphasized, in view of occasional present-day efforts to replace specific trade training with general industrial education, that within ten years after manual training was introduced it was found that it could not take the place of real vocational industrial education. The early advocates of manual training looked upon it as "cultural" education and today few would claim that manual training has much value as vocational education. It does, however, serve useful prevocational and other general education purposes. The Commission stated:[4] "When barely 52 out of 2437 manual training students are found in mechanical trades, it is apparent that the school in which the manual work is introduced for cultural purposes has not met the demands of the trades."

Mechanical Drawing and Design.—Great expositions and fairs are vital factors in the development of science and art. It was at the World's Fair in Paris, in 1867, that English and American manufacturers found that their products were inferior in design to those from France. It was not difficult to find the reason. England had legislated her craft guilds out of existence in 1562; these guilds were not abolished in France until 1791; England had done little prior to the beginning of the twentieth century to develop trade schools; France had hung on to apprenticeship and had started the modern movement for public trade and technical schools in 1878. By 1892 she had several national trade schools and a system of trade and tech-

[3] *Ibid.*, p. 14.
[4] *Ibid.*, p. 90.

nical schools in addition to a large number of municipal, communal and private schools.

As a result of the inquiry that followed in the wake of the conditions revealed by the Paris Exposition, the Commonwealth of Massachusetts presented a petition to the Legislature of 1869 asking that "some definite plan for introducing schools of drawing, for instruction in drawing, free to all men, women and children, in all towns of the Commonwealth of more than five thousand inhabitants" be prepared by the Board of Education.

In support of this petition it was pointed out that prior to that time no general provision for such instruction had been made; that our manufacturers were competing disadvantageously with those of Europe; and that most of our skilled draftsmen had been trained abroad.

As a result of this request the Legislature of Massachusetts, in 1870, made drawing a required study in all the schools of the state. It was further provided that evening schools were to be maintained for industrial instruction and mechanical drawing in all towns and cities over 10,000 inhabitants. This instruction, however, was not vocational in character. Drawing instruction began increasingly to lean toward the fine arts or cultural objectives as distinguished from those of the practical or applied arts.

The Attitude of Labor.—It may be mentioned, parenthetically, that the abuses of what was called apprenticeship during the rise of the factory system of production remained clearly in the minds of workingmen. It had not been many decades ago that the term "apprentice" was often synonymous with "indentured servitude," quite devoid of systematic instruction such as used to be typical of genuine craft apprenticeship. It was therefore most natural that Labor was distrustful of efforts to have trade training undertaken by the public schools. The unions were at this time opposed to specific trade training because they feared that the schools would become "scab hatcheries." They were afraid that they would turn out too many persons seeking to work at the skilled trades, and they felt certain that their training would be inadequate and artificial.

They did not relish the idea of having to compete with large numbers of "half-baked" mechanics. The unions at this time expressed themselves as being in favor of general technical training but they did not favor what we today know as vocational industrial education. We shall later see how the latter type of training was not long to be deferred, and how the attitude of Organized Labor changed regarding it.

Child Labor Not Needed.—The commission found that more young boys and girls were employed in certain industries, such as the textile mills and candy factories, than in others. Many firms felt that the employment of young persons, say under fourteen years of age, is not desirable. To quote the report:[5] "Evidently the industry can thrive without child labor, and thrive better with educated labor." The cotton mills employed children younger than the woolen and silk mills.

On various occasions the writer has been told by owners and officials in silk mills: "We would rather employ no one under sixteen" and "It would be a distinct advantage if all of our operatives were high school graduates. They would have a better appreciation of fundamental economic laws, and they would make more intelligent workers." There appears to be a distinct tendency to make sixteen the minimum age of employment in factory and mill work as well as in the skilled trades.

Not only is child labor not needed by industry but children have an inherent right to an education that will safeguard their future welfare and happiness. To an increasing extent this program of training is calling for full-time attendance in school up to sixteen years of age. The Douglas Commission had this to say:[6] "The most important fact in the consideration of wages is that the child commencing at sixteen overtakes in less than two years his brother beginning at fourteen."

The Demand for Experienced Help.—With more and more emphasis placed upon production, and with the decline of the personal relationship that formerly existed between apprentice and master, there was noticed by the commission a strong

[5] *Ibid.*, p. 46.
[6] *Ibid.*, p. 89.

and growing tendency to demand experienced help rather than untrained workers or apprentices. This impressed the commission so much that they recorded the following sentiment:[7] "It is certainly a problem as to where the next generation of skilled workers is to come from. Employer after employer refuses to teach, and union after union limits the number of apprentices. Both seem to say to the boy: 'Not wanted here!'" There are many places where those observations are true today. But it should be pointed out that both employers and unions are, in most places, more sensitive to the need for direct training for skilled workers than they apparently were in 1905. As proof we have only to refer to the modern training programs conducted jointly between industry and the public schools—programs that have the endorsement of Labor and of the employing groups.

Manual Training Not Trade Training.—In a letter to the commission, printed as Appendix 4 of the report, Charles F. Warner of Springfield, Massachusetts, had this to say:[8] "Our manual training high schools have been thought by some to be capable of furnishing this needed fundamental training in mechanical principles and practice. They undoubtedly do this to a limited extent; but, as they are generally conducted, so much variety of mechanical instruction and so little practice in any one line are given that they can hardly be said to do more than give their pupils a certain appreciation of mechanical principles and processes. *While this is of great value it is manifestly not trades teaching.*" He proved his point by a detailed presentation of statistics of graduates from some of the prominent manual training high schools of the day—the Northeast Manual Training School and the Central Manual Training School of Philadelphia; the St. Louis Manual Training School, the Boston Mechanics Arts High Schools, and the Ridge Manual Training School of Cambridge.

Mr. Warner called the attention of the commission to the need of establishing day trade schools. He says, in part: "The

[7] *Ibid.*, p. 89.
[8] *Ibid.*, p. 188.

commission is undoubtedly aware of the feeling among industrial leaders that such schools are needed, and that the industrial development of the state will be seriously retarded if provision is not made in some way for teaching apprentices. . . . Our conservatism in this matter, in contrast with the educational enterprise of many foreign governments, is well understood."

Although it was realized that the German states presented problems somewhat different from ours, comparative estimates prepared by Dr. Thurston of Cornell University were quoted. The latter estimated that at that time technical education of high school grade was probably fifty times as extensive in Germany as with us. Ten years prior to the meeting of the convention, Prussia had nearly 3,000 industrial continuation schools with an enrollment of over 200,000 pupils. The kingdom of Saxony, one of the German states having a population of less than 4,000,000 people, maintained more than 200 industrial schools. The city of Berlin, about 1895, had twenty-one trade schools with an enrollment of nearly 9,000 students. This was exclusive of the large evening school program in effect, which also provided special training for working classes of school age.

The industrial education system of Germany was developed there at a time when apprenticeship was still strongly supported and when the nation was a country of small shops. The main function of the trade and continuation schools was to supplement, through instruction in mathematics, drawing and science, the training received on the job. Methods of production had not yet become so highly specialized as in the United States. In our own country specialization in industry had, by 1905, already progressed to the point where it had almost killed apprenticeship in all but a very limited number of skilled trades such as the machine shop, printing and building trades.

Summary.—The report of the Douglas Commission helped to bring before the public the fact that, desirable as manual training and technical high school training were, they evidently are not to be regarded as vocational industrial education. The commission pointed out the fundamental importance of having real trade schools and of teaching applied art. Under academic

influences both drawing and shop instruction as taught in the schools were becoming formal and general in character.

The commission also took a definite stand against child labor. It pointed out that the child who stays in the full-time school until he is sixteen soon overtakes the lad who leaves at fourteen years of age.

While recognizing the inadvisability of trying to duplicate foreign plans for vocational education the commission pointed out certain features of English, French and German programs that were believed to hold suggestions for our own country.

The appointment of the commission was almost contemporaneous with the formation of the National Society for the Promotion of Industrial Education. The original reports of the commission have long been out of general circulation. A reprint of the report has more recently been made by the Bureau of Publications of Teachers College, Columbia University.

QUESTIONS AND PROBLEMS

1. What factors contributed toward the changing sentiment concerning the need for industrial education at the beginning of the twentieth century?

2. What relationship, if any, was there between the development of the Latin schools and colleges, and industrial education?

3. Compare the personnel of the commission appointed to study the need for industrial education in Massachusetts (the Douglas Commission) with the one appointed in 1887 by Governor James A. Beaver of Pennsylvania, or similar commission in any other state.

4. Make a brief comparison of the two reports referred to in the preceding problem.

5. Explain how an education that is entirely bookish tends to produce wrong ideals and attitudes concerning the dignity and worth of manual labor.

6. Explain: "The general public has been strangely blind to the narrowness of the public education."

7. What factors contributed toward the point of view that manual training should be "cultural" in aim?

8. For what purpose was drawing introduced on a compulsory basis into the public schools of Massachusetts by the Legislative Act of 1870?

9. Was the fear, expressed in 1905, well founded, that public industrial schools might become "scab hatcheries"?

10. What would be the probable effect if the compulsory school age for

attendance upon full-time schools were raised in all states from fourteen to sixteen years?

11. Why is there a relatively stronger demand for experienced help, as distinguished from apprentice help, in some skilled trades than in other skilled trades of approximate equal grade?

12. Are there proportionately more apprentices in the trowel trades than in the woodworking trades? If so, why?

13. In establishing industrial education in a city is it ever fair to show preference to one or more trades?

14. Compare the German continuation schools with those of America.

15. Does the United States need a greater or a less number of trade schools, per thousand of population, than such countries as England, France or Germany? Why?

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CHAPTER VIII

THE NATIONAL SOCIETY FOR THE PROMOTION OF INDUSTRIAL EDUCATION

Introductory Statement.—It is the purpose of this chapter to present a brief historical sketch of the National Society for the Promotion of Industrial Education.[1] Nothing that we may say will do full justice to the achievements of that large group of men and women who took an active part in the work of the society, nor to the smaller group who started and led the organization from its inception on through to the time when it was enlarged in scope and still later to the time when it was merged with the Vocational Association of the Middle West to form the American Vocational Association.

The work of the pioneer group who through years of devoted service shaped public opinion in America so that the national vocational education act became a reality in 1917 deserves special attention. It seems only fitting and right that the coming generation and those to follow should know something of what was involved in passing such a piece of far-reaching legislation. A knowledge of at least the high points is certainly to be desired on the part of vocational teachers as it will serve as a background for a better understanding and a deeper appreciation of the theory and practice in vocational education.

The Dawn of a New Era.—About the beginning of the twentieth century, prominent business men, leaders in industry, maufacturers and educators came to the conclusion that industrial education was very necessary to the welfare of the country. They saw the great social and economic advantages of industrial education and decided that it would be well to organize a society, national in scope, in order to further this purpose.

[1] Data taken from the official minutes of the National Society, supplemented by its printed proceedings and reports.

In the spring of 1906, Dr. James P. Haney, Director of Manual Training, New York City, and Professor Charles R. Richards of Teachers College, Columbia University, came to the conclusion that the time for united action in promoting industrial education had come. They brought together, at the Engineers' Club in New York City, on June 9, a group of thirteen men. It became evident in this meeting that there was a widespread interest in the country in industrial education. A subcommittee of five was appointed. It held frequent meetings with a view toward organizing a national society that would accomplish the ends thought to be desirable. A preliminary announcement was sent out stating that a public meeting would be held in New York City in the autumn of that year (1906) at which a plan of organization would be considered. The opening paragraph of that announcement was as follows:

> The need for industrial education in the United States has become a social and industrial question of the first magnitude. It is not only a question that critically affects our material prosperity as a nation, but one that vitally concerns the wellbeing of society as a whole.

and a following paragraph stated:

> From the nature of the case the problem cannot be solved, except in part, by the employer. It is necessarily a general social problem and, although experiment and demonstration must depend largely upon private initiative, the situation can be met—comprehensively and in a final way—only by state or community action.

We have in these paragraphs a clear-cut statement showing: (1) recognition of the importance of industrial education; and furthermore (2) a presentation of the point of view that industrial education must, in the future, have the support of community and state action.

In order to show the representative character of the men whose names appeared as sponsors of this preliminary announcement, they are reproduced herewith:

Milton P. Higgins, Chairman; president Norton Emery Wheel Co., Worcester.
C. R. Richards, Secretary; Teachers College, Columbia University.
Henry S. Pritchett, president, Massachusetts Institute of Technology.

M. W. Alexander, General Electric Company.
James P. Haney, Director of Manual Training, New York City.
Robert A. Woods, director, South End House, Boston.
Leslie W. Miller, principal, Pennsylvania Museum and School of Industrial Art, Philadelphia.
J. Ernest G. Yalden, superintendent, Baron de Hirsch Trade School, New York City.
Charles L. Warner, principal, Technical High School, Springfield, Mass.
James P. Munroe, Munroe Felt and Paper Co., Boston.
Arthur A. Hamerschlag, director, Carnegie Technical Schools, Pittsburgh.
Louis Rouillion, director, Franklin Union, Boston.
Henry Bruere, secretary, Bureau of City Betterment, Citizens' Union of the city of New York.

Organization of the National Society.—A further announcement was distributed, in large numbers, calling a public meeting on November 16, 1906, at Cooper Union, New York City, in order to affect a permanent organization. Thorough preparations were made for this meeting. The announcement contained, in addition to statements concerning the need for the organization and its proposed purposes, a detailed list of the names and official titles of 161 leading men and women in the United States, representing a great variety of interests, who endorsed the plan. This list, headed by President Theodore Roosevelt, contained the names of many men and women internationally known.

The meeting was called to order by Dr. James P. Haney. About 250 persons were present, among them prominent business men and educators from cities such as: New York, Chicago, Boston, Philadelphia, Springfield, Ill., Milwaukee, Wis., Menomonie, Wis., Buffalo, Cincinnati, and Raleigh, N. C.

Dr. Henry S. Pritchett was elected president; M. W. Alexander, vice-president; and V. Everit Macy, treasurer. Charles R. Richards served as acting secretary and was later elected to that office.

A suggested form of constitution was considered during the meeting and was approved with certain modifications. The following are excerpts from the constitution:

"II—OBJECTS: The objects of this society shall be to bring to public attention the importance of industrial education as a factor in the industrial development of the United States; to provide opportunities for the study and discussion of the various phases of the problem; to make available the results of experience in the field of industrial education, both in this country and abroad; and to promote the establishment of institutions of industrial training."

"III—MEMBERSHIP: All persons interested in the subject of industrial education shall be eligible to membership."

"IV—OFFICERS: The officers of the Society shall be a President, Vice-President, Secretary, Treasurer, and twenty-seven Managers. There shall also be an Executive Committee, and Standing Committees as hereinafter provided."

Three standing committees were appointed: Finance, Public Interests, and Publications.

High Lights of the Meeting.—It is often of great interest to take a retrospective view of what has been accomplished. The speakers at the organization meeting pointed out certain needs; they emphasized certain points of view, and at times voiced cautions that they considered important. Thus Nicholas Murray Butler said: "It seems to me that this Society has taken hold of one of the most important and most far-reaching of our social and industrial problems." This quotation is typical of the thoughts expressed by a number of the speakers on that occasion. They recognized, and well they might, that there were tremendous social as well as economic benefits to be derived through industrial education.

Jane Addams spoke most effectively of the value of keeping education close to what is happening in everyday life. She said in part: "To separate educational interests from contemporary life means not only that education grows meaningless and comes to rely upon tradition for its inspiration, but it also means that contemporary life, because this educational interest is withdrawn from it, becomes mechanical and uninspired by the variation and charm of youth."

Nor were these ideas limited to representatives of education. Frederick P. Fish, president of the American Telephone and Telegraph Company, Boston, Mass., in his address said: "Fortunately there is reason to believe that industrial education will

provide national and individual wellbeing not alone in ways that relate to material progress. I desire to emphasize this proposition. I should be sorry to speak upon the narrow question to which I must particularly address myself, if in so doing I were for a moment to give the impression that the material advantages are the only ones to be considered."

Early in 1907 committees were appointed to study and report upon plans of industrial education adapted to the following industries: (a) Boot and shoe industry; (b) Operatives in Textiles; (c) Building Trades. Each committee was made up of three persons, a student of industrial education to serve as secretary, a manufacturer and a representative of organized labor. Arthur D. Dean was made secretary for the study of the boot and shoe industry and William W. Crosby for the study of operatives in the textile industry.

The minutes of the early meetings of the society show repeatedly that those in charge were genuinely interested in living up to the spirit of the constitution which provided that "all persons interested" could hold membership in the society. They went further than that. When it became evident that organized labor was not adequately represented it was moved that labor should be invited to take a more active part in the councils of the society. Also, when committees were appointed, as, for example, sub-committees for the studies undertaken in the boot and shoe, the building, and the machine trades, organized labor was given representation.

State Committees Organized.—At the meeting of the Executive Committee held at the Hotel Manhattan, New York City, on October 21, 1907, Mangus W. Alexander, Chairman of the Committee on Propaganda, submitted a report upon two matters of unusual interest. The first of these dealt with the formation of state committees. As early as April, 1907, the committee had started to stimulate the formation of state committees; and such committees were first organized in New York, Pennsylvania, Connecticut, Massachusetts, Ohio, West Virginia and Missouri. By October over 1500 letters had been sent, within the space of nine months, to promote the plan, and the Executive Committee

felt gratified to report in October that "a nucleus of state committees has been formed in thirty-five states of the Union." In some states large committees had been formed; in others only a few people had signified their willingness to serve. We can imagine the great amount of work involved when we realize that the men had to be hand-picked and to represent all interests concerned, and that extended correspondence covering several months was carried on before membership on the committee was either accepted or declined.

The formation of these state committees was a part of the general plan to gain the confidence and support of the country. In the various states 203 prominent men had agreed to carry forward the work of the society. Some of the state committees soon started their newspaper publicity work.

The effort was made to organize an especially strong state committee in Illinois since Chicago had been selected as the city where the first annual meeting was to be held.

The First Annual Meeting.—The second matter of importance reported upon by the Propaganda Committee was the first annual meeting to be held in Chicago. That city was selected because it was centrally located and was a radiating center of much interest, resource and influence. The state committee for Illinois showed a good spirit in that it undertook to bear all expenses resulting from hiring halls, the entertainment of the guests of the society, the local publicity campaign, stenographic service for reporting the proceedings of all meetings, and everything that was involved in the local arrangements.

The first annual meeting began officially with a public dinner on December 5, 1907, at the Auditorium Hotel. The meetings, scheduled for the two following days, were held at the Chicago Art Institute. The topics for the dinner meeting were "Industrial Education as an Essential Factor in Our National Prosperity" and "The Aims of the National Society for the Promotion of Industrial Education." During the following days apprenticeship training, trade school education, and the worker's benefit from industrial education were discussed. Much public

interest was manifested in the meetings and the publicity given to the National Society was extensive.

National Society Sponsors Study of Public Industrial Education.—At the beginning of 1908, there developed the conviction voiced by James P. Munroe (later member of the Federal Board for Vocational Education): "the important work of the society in the future should consist not so much in the bringing forward of the desirability of industrial education as emphasis upon the methods by which such education may be made practicable." At the January, 1908, meeting of the Board of Managers it was resolved that the society should give definite attention to a study of the possibilities of industrial education under public direction. It was further resolved that three committees should be appointed to report at the second annual meeting on: (a) Industrial training for boys and girls fourteen to sixteen years of age; (b) Public technical high schools; and (c) Public evening industrial schools.

It was also moved that special attention should be given during the year to the problem of securing efficient teachers. Teacher-training was regarded as one of the most serious problems affecting the development of industrial education.

Milton P. Higgins of Worcester, Mass., president of the Norton Companies, spoke in favor of a training plan calling for a combination of the school giving academic instruction and the shop giving practical training. It will be recalled that this plan was introduced at Fitchburg, Mass., during that same year.

Officers for 1908.—Dr. Carroll D. Wright of Massachusetts was elected president. Magnus W. Alexander, also of Massachusetts, was elected vice-president, and Frederic B. Pratt of New York was made treasurer. The secretary, chosen by the Board of Managers, was Dr. James P. Haney, Director of Manual Training, New York City.

State Societies.—In accordance with a motion passed on February 18, 1908, the president appointed a committee composed of Magnus W. Alexander, Milton P. Higgins, and the president to draw up a plan of organization of state societies to

be formed from the state committees. The chief points in the plan were: (1) Each state branch to have a membership of 50 or more; (2) members of the state branch to be members of the National Society; (3) the state branch to receive $1 per member of the National Society dues; (4) the state branch to meet preceding the annual meeting of the National Society.

The state branches were felt to be desirable because industrial education cannot be promoted by persons not thoroughly familiar with local conditions. Specific instances were cited to show the spreading and increasing influence that the National Society was able to exert through the state branches. It was pointed out that the New Jersey committee was responsible for the passage of a legislative act creating a state commission to study industrial education. The Wisconsin committee helped to establish the Milwaukee School of Trades under public auspices. The Oregon committee helped to establish the Portland School of Trades, and in Connecticut, in cooperation with manufacturers, trade training under public auspices was begun.

The Atlanta Meeting.—The second annual meeting of the National Society was held at Atlanta in November, 1908. It was made the occasion for much publicity. A review of the activities of the National Society for the year 1908 was sent, together with the program of the meeting, in the form of a printed clipping sheet, to 1300 papers throughout the United States.

An outstanding factor in this meeting, as in the one held at Chicago, was the definite provision for representatives of industry on the program—it was not a meeting in which educators alone took part.

Variety of Schools Advocated.—In the spring of 1908 a committee of ten was appointed to study the relationships that should exist between general education and industrial education. The general conclusion of this committee was that a measure of success is likely to be achieved by all of the various types; that all of them are to be welcomed as experiments; and that when they relate themselves, as they must in order to exist perma-

nently, to the public schools of general education they will render worth-while service.

Officers for 1909.—The nominating committee presented the names of the following officers which were duly elected: President, Alexander C. Humphreys, New York; vice-president, Walter C. Kerr, New York; treasurer, Frederic B. Pratt, Brooklyn, N. Y. J. C. Monaghan was made secretary.

From January to November the membership was raised from 559 to 1127, the latter figure including ten life members, 31 sustaining members and 1086 active members. Encouraging reports were received from state branches. New York and Ohio increased their membership greatly. Massachusetts had a membership of 220. Pennsylvania introduced a bill into the legislature providing for a state commission to investigate the need for industrial and agricultural education. The first girls' trade school was opened in Philadelphia the same year.

One of the gratifying reports of the year was to the effect that labor leaders like John Golden, John Mitchell and others were taking an active interest in the meetings and discussions of the National Society.

The Third Annual Meeting.—This meeting was held at Milwaukee, Wisconsin, in December, 1909. Thirty schools from various sections of the country had interesting exhibits. By this time the National Society had published and issued nine bulletins. One of the interesting committee reports given had to do with the standardization of technical terms used in industrial education.

Nomenclature.—From the report of a special committee of ten appointed in the spring of 1908, made in December, 1909, it is apparent that the nomenclature that we use today was going through a process of evolution. This, of course, is really what one ought to have expected since the basic ideas concerning industrial education, its significance, its purposes, and ways and means of giving it were then, as we hope they will always remain, in a state of gradual evolution to keep pace with contemporary life. The Committee of Ten recommended in part as follows:

"1. *Industrial Education*—This term should be used to mean training for the intelligent practice of any trade, including, of course, agriculture." ———

"4. *Agricultural Schools*—Agricultural schools are industrial schools whose main purpose is to train for the trade of agriculture."

These quotations are given to show how the terminology of vocational education has been clarified in the space of a few years. We today, of course, differentiate clearly between industrial education and agricultural education. On the other hand, many of the concepts of 1909 concerning industrial education have remained practically unchanged up to the present time. Manual training, then as now, was looked upon as a form of general education.

The officers elected for the year 1910 were Charles R. Richards, president; J. W. Lieb, Jr., vice-president; Frederic B. Pratt, treasurer; Matthew P. Adams, secretary. Edward H. Reisner later became secretary.

The Boston Meeting.—In November, 1910, the National Society held its largest and strongest meeting that had been held up to that time. Dr. David Snedden was state commissioner of education in Massachusetts at that time, and Charles A. Prosser was deputy commissioner. Trade work for girls received considerable attention on the program through such speakers as Dr. Susan M. Kingsbury, Mrs. Mary S. Woolman, Florence M. Marshall and Helen R. Hildreth. Under the head of part-time and evening schools, attention was given to the part-time cooperative plans in effect at Fitchburg, Mass., and Beverly, Mass. C. A. Prosser discussed "The Evening Schools of Massachusetts" and Dr. Snedden gave a summation of the discussions. Dr. Georg Kerschensteiner, superintendent of schools, Munich, Bavaria, spoke on the "Continuation Schools of Germany."

The officers elected for the year 1911 were: James P. Munroe of Boston, president; Fred A. Geier, of Cincinnati, vice-president; and Frederic B. Pratt, of Brooklyn, treasurer. Edward H. Reisner was secretary, and later in the year J. H. Cone was made secretary.

Terminology Again.—The Committee on Terminology, headed by Professor Richards, gave another report which differed considerably from the one given two years earlier. The definitions given in 1911 are more like those generally accepted today. For example:

> "Industrial education denotes the field of vocational education designed to meet the needs of the manual worker in the trades and industries, including the occupations of girls and women carried on in work shops."

The term "household arts" to denote vocational home economics or home making was still used instead of the latter terms. A clearer distinction than had previously been made was drawn between manual training and technical high school instruction. In 1909 nine of the ten men on the committee had considered that the terms meant the same thing.

Consideration was given to the appointment of a field secretary for the National Society, but no appointment was made at this time. Dr. David Snedden was made chairman of the Committee on Legislation. He presented an analysis of Senate Bill 10905, commonly known as the Page Bill, providing national aid to vocational education. The National Society had drafted, independently, another bill. The provisions of both bills were compared and discussed in detail.

Cincinnati Entertains N.S.P.I.E.—The fifth annual meeting was held in November, 1911, at Cincinnati. The cooperative plan of the University of Cincinnati was discussed by Dean Herman Schneider; part-time continuation education and evening schools came in for their share of attention.

The matter of public support of industrial education was by no means a settled question in 1911. James P. Munroe presided at a meeting where representatives of labor, of the U. S. Bureau of Labor, and educators discussed the topic: "Should trade schools for youths above sixteen years of age be provided at public expense."

Prosser Made Secretary.—The year 1912 found the National Society entering upon a very active program of promoting the cause of vocational education. On April 1, 1912, Charles

A. Prosser was made secretary. He at once gave his attention to the campaign for federal aid for vocational education. During his first year in office he traveled more than 50,000 miles, dealt with the promotion of industrial education in at least fifty cities located in a dozen different states, made more than a hundred addresses and established working relations with national, state and local organizations representing labor, manufacturers, educational, social and civic interests.

The Page-Wilson Bill sponsored by Senator Carroll S. Page of Vermont and Representative William B. Wilson of Pennsylvania was not reported out of the committee that year.

Prosser Assists in Drafting Laws.—During the year 1912 Dr. Prosser, as secretary of the National Society, held a number of conferences with representatives of several of the states that were interested in laws seeking to establish and promote industrial education. Valuable service of this sort was rendered to eight states. The statement of principles and policies formulated at a meeting of a committee of the National Society at its annual convention in Philadelphia in December, 1912, was taken as a basis underlying recommendations for state legislation. Some of these recommendations are given herewith:[2]

1. State aid is necessary to stimulate and encourage communities to carry on work in vocational education. At the same time legislation should provide that local communities should be permitted to initiate and maintain vocational training, if desired, entirely apart from state support and supervision.

13. The proper expenditure of state moneys for vocational schools should be fully safeguarded, while, at the same time, the initiative in adapting measures to local conditions should be left to local authorities.

14. State aid should be sufficient to induce localities to take up the work and to justify reasonable participation on the part of the state in control and administration, but, on the other hand, state aid should not be so large as to sacrifice local initiative and support.

15. Payments to local communities should not be made automatically,

[2] For a complete statement see the six-page circular "Principles and Policies that Should Underlie State Legislation for a State System of Vocational Education." Published by the National Society for the Promotion of Industrial Education, 1913.

but only with the approval and recommendation of the state board of control for work actually accomplished.

16. Legislation should be so drawn for this purpose that a large amount of discretion is left to the state boards of control in the definition of principles and standards for the inspection, supervision, approval, and reimbursement of the work.
17. Attendance should be free upon a state-aided vocational school for all persons in the state otherwise eligible, whether they are or are not residents of the community in which the school is maintained.
23. To secure effective administrative control of vocational education, wherever practicable representation of employing and employed interests should be provided in administrative boards.
26. Efficiency in vocational education requires different methods of school administration, different courses of study, different qualifications of teachers, different equipment, different ways of meeting the needs of pupils, and a much greater flexibility in adapting means to ends than is possible of development under the ordinary routine of the public school system.

Grand Rapids Convention Arranged.—In April, 1913, the Executive Committee, after some discussion, decided to hold its annual convention at Grand Rapids. Six other prominent cities also desired the convention. The secretary was instructed to draw up a statement of the conditions under which the convention would go to Grand Rapids. Since the chief purpose of holding the convention at Grand Rapids was to promote vocational education in the state of Michigan, the conditions laid down for the convention included securing the participation of prominent state and city officials, and others who might help the cause of vocational education.

Training for Women and Girls.—The work of industrial education for women and girls was furthered by creating a permanent special committee known as the Committee for Women's Work of the Society. This committee was made up of fifteen members, and was to hold a meeting in New York every six months. One of the functions of the committee was to "develop in cooperation with the secretary of the society, plans for the work of the assistant secretary of the society." Miss Cleo Murtland was appointed to the latter position.

Placement Service.—During the year 1913 the National Society established a free placement service for members who

desired positions as industrial teachers. One hundred fifty-five members registered but there were few placements as the salaries asked were usually higher than school superintendents expected to pay. This showed the necessity of publicity that would acquaint school authorities with the fact that they would have to pay more for teachers of industrial education than for those teaching general education subjects.

Important Resolutions.—Among the most important resolutions passed at the Grand Rapids meeting was one that the National Society should heartily endorse the resolution, then before the extra session of Congress, that provided for a commission of nine persons to investigate the need for federal aid for vocational education. The other resolution dealt with teacher-training. It was resolved "that the proper training and certification of teachers in vocational education be brought before the proper legislative and educational authorities of the country." The resolution committee consisted of Arthur D. Dean, Wesley A. O'Leary, and Wm. T. Bawden.

Teacher-Training Started.—During the winter of 1913, the National Society induced Pratt Institute, Brooklyn, to establish evening teacher-training classes for skilled mechanics who desired to become trade teachers. The classes spent two evenings per week in discussing the practical problems that are met in industrial education. Consideration was also given to the social, economic, industrial and educational background for vocational education. An additional evening per week was devoted to observation of teaching in the New York evening schools. Wesley A. O'Leary was the instructor. The men in the class were carefully selected for their trade and personal qualifications. Other classes were in progress at the same time at Albany and Buffalo, New York.

National Society Starts Surveys.—At the Grand Rapids Convention, October, 1913, Dr. Prosser recommended that all cities asking for the 1914 convention be required to meet the same conditions as met by the city of Grand Rapids and in addition that they provide the funds for conducting a local survey to find out the possibilities for vocational education in the com-

munity. Such a survey would be undertaken as a "type-study for the country" and should be under the joint auspices of the local board of education and the National Society.

Richmond, Virginia, was selected as the convention city for 1914, and the following survey committee was approved: Dr. Leonard P. Ayres, Russell Sage Foundation, chairman; L. W. Hatch, Albany, New York; Chas. H. Winslow and Chas. H. Verrill of the Bureau of Labor Statistics, Washington, D. C.; J. A. C. Chandler, superintendent of schools, Richmond, Va.; and Charles R. Richards. This survey report, later printed as a publication of the National Society, aroused much interest and created much favorable comment.

Alvin E. Dodd Appointed Assistant Secretary.—The work of the society had grown to such an extent that it became necessary to increase the staff. In September, 1914, Alvin E. Dodd, then of the North Bennet Street Industrial School, Boston, was appointed. He was given special responsibility for the business and financial affairs of the office.

Smith-Hughes Bill.—The first mention of the Smith-Hughes Bill found in the minutes of the National Society occurred in a report of the Executive Committee under date of June 16, 1914. It is as follows: "The secretary reported progress on the Smith-Hughes Bill regarding national grants for vocational education."

Minneapolis Convention Arranged.—In March, 1915, Minneapolis was selected as the place for the annual convention. In line with the policy of the preceding year an agreement was made whereby the city of Minneapolis guaranteed funds and assistance to make possible a vocational survey. The following were appointed to serve as a general survey committee: C. R. Richards, chairman; Mrs. Mary Schenk Woolman; Chas. H. Winslow; Leonard P. Ayres; F. F. Spaulding; and Charles A. Prosser, ex-officio. In addition to the general survey committee it was planned to have a local survey committee which worked in cooperation with the general committee. The purpose of the survey was to study the industries and department stores to get data on industrial education, and also to study the schools to see

what facilities they had to meet the requirements for industrial education.

Charles A. Prosser Resigns Secretaryship.—From the standpoint of the National Society, one of the most important events in the year 1915 took place when Dr. Charles A. Prosser announced his election as director of the William Hood Dunwoody Industrial Institute of Minneapolis, to take effect in September. The executive committee accepted his resignation with regret and with good wishes for his success in the new field of work.

In Dr. Prosser the National Society lost the most experienced leader in vocational education in the country. As secretary of the society he was pre-eminently its unquestioned, forceful and able leader. The various committees and sub-committees of the National Society turned to him for leadership and got it. During the three years that he was secretary a great deal was accomplished toward shaping public opinion, securing cooperation of federal, state and local groups, and laying the groundwork for the Smith-Hughes Act that was sponsored by the society. Charles A. Prosser, more than any other single individual, helped to shape the state and federal vocational education legislation in the United States. Fortunately his resignation as secretary of the society has not in any sense lessened his interest in the welfare of vocational education, nor his activity in promoting vocational education in America.

Federal Legislation.—Early in December, 1915, the Smith-Hughes Bill for federal aid for vocational education was introduced in both Houses of Congress. Various suggested modifications of the Bill were discussed. One of these had to do with the personnel of the Federal Board that would administer the act. As introduced in the Sixty-third Congress the board would be made up of the Postmaster General, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the Secretary of Labor, with the Commissioner of Education as the executive officers of the board. It was urged that the board be made up of men who could devote their full time to the work.

Miss Murtland Resigns.—Miss Cleo Murtland, who for the last three years had been actively engaged in making studies and surveys bearing upon the work of women and girls in industry, resigned her position as assistant secretary of the National Society. This resignation was accepted with regret and Miss Murtland was given a vote of thanks by the executive committee for her unselfish and loyal service.

More Surveys Undertaken.—During the year 1916 the National Society cooperated in the Indiana state survey which represented a large undertaking. The results were printed in five volumes, one for Evansville, Richmond, and Jefferson County, and two for Indianapolis.

The society also cooperated with the city of New York in getting a survey started in the fall of the year. In addition it cooperated with the American Federation of Labor and other interests in survey work. While all of this was going on it should not be forgotten that the Smith-Hughes Bill was before Congress and required attention and work. For various reasons, political and otherwise, the Smith-Hughes Bill had to wait over until the early part of the next year for final ratification.

The Indianapolis Convention.—The Indianapolis convention was of unusual significance. It was the tenth annual meeting held by the National Society; it centered around two things: the comprehensive surveys undertaken during the year 1916 and the Federal Vocational Education Act. The convention was in session when word was received that the Smith-Hughes Act had passed. Assembled at the conference were many of the men and women who had worked hard for years to bring about that legislation. It ushered into being a new era for vocational education in the United States.

Dennis Suggests Society Change Its Name.—L. H. Dennis, then director of agricultural education for the Commonwealth of Pennsylvania, presented the following resolution:

WHEREAS, the Smith-Hughes Bill providing federal aid for vocational education in agriculture, trade, home economics, and industrial subjects has now become a law, and

WHEREAS, the work of this society is no longer that of promotion, but rather that of the development of industrial education including agriculture and home economics under the general head of vocational education, therefore be it

RESOLVED, that it is sense of this meeting that the name of this society which is now the National Society for the Promotion of Industrial Education, be changed to the more inclusive title of The National Society for Vocational Education.

It was voted that this resolution be referred to the Board of Managers with power to act.

The Last Meeting of the Original Society.—The eleventh annual meeting, and the last one of the National Society for the Promotion of Industrial Education, was held in Philadelphia in February, 1918. In the approximately ten years of its existence the society had succeeded in crystallizing public opinion in the shape of the Federal Vocational Education Act. Prior to February 23, 1917, when President Woodrow Wilson signed the act eight states had passed laws establishing state-aided systems of vocational education: Massachusetts, 1906; New York, 1909; Wisconsin, 1911; and Connecticut, Indiana, New Jersey, Pennsylvania and Virginia, 1913.

The lay members of the Federal Board for Vocational Education were appointed by the President in June, 1917; the executive staff in August. By the end of the year all forty-eight states had accepted the provisions of the Federal Vocational Education Act.

In line with the recommendation made at the Indianapolis meeting in 1917, the committee on future policy, name and organization of the National Society for the Promotion of Industrial Education submitted its report at the Philadelphia meeting.

This report mentioned briefly the achievements of the National Society, discussed problems arising from the World War, dwelt on permanent vocational education problems and presented a proposed form of organization for the National Society for Vocational Education.

Summary.—During the early years of the present century, in response to a growing popular interest in industrial educa-

tion, a small group of thirteen men organized in New York City the National Society for the Promotion of Industrial Education that was to have a profound effect upon the development of industrial education in the United States and to some extent in other countries. In the same year, 1906, the Douglas Commission made its important report on industrial education to the legislature of Massachusetts. About this time industrial education was being agitated by a number of leaders of industry and of education, and by others whose interests were primarily those of lay citizens.

The names of a number of the men prominent in organizing the National Society are given because all honor is due them for the constructive work that they jointly accomplished. Students of trade and industrial education of the present and of the future should not forget the great economic and social problems that demanded solution at the time when industrial education had its birth upon American soil, and they want to know something about the men and women who pioneered the way. Now that several decades have passed, it is relatively easy to see the value of their work, and the wisdom of their counsel. One must have had personal experience in promoting a great cause in order to appreciate all that was involved in making the National Society the influential organization that it came to be. The leadership that was responsible for the organization of the society was looking upon this whole problem of industrial education in no narrow, selfish way. There is abundant evidence to show that the men and women who sponsored the effort were looking for something that would contribute toward the general good of society as well as toward the development of training that would benefit specific individuals and groups.

The formation of state committees was a move in the right direction. The state is the logical as well as the legal unit in our program of public education. Each state has its traditions, its special problems and special characteristics that are best known and best understood, as a rule, by those who have lived there. So, from many points of view, it is very desirable to use

local state leadership in furthering educational movements that have national appeal.

It is of interest to note how we passed, slowly to be sure, from the practices of colonial apprenticeship through the period of the industrial revolution to the time when manual training was introduced, then to the period when specialized industrial education was in demand, and now to the time when the outstanding problem is no longer one of justifying industrial education so much as it is a matter of presenting suitable plans of procedure and proper methods of doing the things that public opinion favors.

The appointment of Dr. Charles A. Prosser as executive secretary of the National Society for the Promotion of Industrial Education marks a distinct point of progress of the program for which the society was organized. The years from 1912 to 1917 were most important ones in the development of public opinion in favor of vocational education conducted under public auspices; they were also important in terms of legislative progress in the various states; and finally the results can be measured in terms of the passage of the National Vocational Education Act of 1917, sometimes known as the Smith-Hughes Act.

The interests represented in the membership of the National Society for the Promotion of Industrial Education were many and varied. Those who represented the interests of childhood and youth were often teachers or administrators actively engaged in education. Others represented the educational interest of adults—of employed men and women. Others, like Jane Addams, were social workers and necessarily saw life from a somewhat different angle than people who live far away from congested cities and slums. Then there were representatives of labor—very much concerned about what might or might not be undertaken in the way of industrial education in tax-supported schools or classes. In addition to this there were the manufacturing interests and employers individually and in organizations. Finally, there were many others—fathers, mothers, men and women in a host of occupations, all of them contributing some-

thing toward the development of a large program of vocational education.

It is not claimed that all of the problems of industrial education have already been solved for the future; it is not thought that our present program of industrial education is perfect. But we can say that progress is being made and that the National Society for the Promotion of Industrial Education, as an association, did much to bring that about.

The principles and policies as they were worked out in committee by the National Society for the Promotion of Industrial Education are reflected in the legislation of probably all of the states. It is therefore of interest to compare such policies and principles as were set up, let us say, in 1912, with those now in force.

QUESTIONS AND PROBLEMS

1. What was the point of view that prompted the following: "The need for industrial education in the United States has become a social and industrial question of the first magnitude"?

2. Should experimentation in the interests of advancing education be done primarily by: (a) private initiative; (b) public agencies?

3. Discuss the object or purpose of the National Society as outlined in paragraph II of its Constitution.

4. What were some of the most important conditions that affected the development of industrial education?

5. What advantage, if any, has been gained by differentiating between agricultural and industrial education instead of regarding both forms of vocational education as one, as was suggested by the Committee of Ten, in 1908?

6. When was cooperative education of secondary grade introduced into the public schools?

7. When was vocational industrial education introduced in your state upon: (a) voluntary; (b) a permissive mandatory; and (c) a compulsory basis?

8. What principal changes, if any, have been made in the industrial education school laws of your state since the passage of the first act?

9. The National Society for the Promotion of Industrial Education recommended, in 1912, state aid for vocational education. How may that be justified?

10. Compare the reasons for state aid with those advanced for federal aid for vocational education.

11. How are the use of state and federal funds for vocational education safeguarded?

12. Should state and federal funds pay the total cost of vocational education in the poorest school districts? If not, what proportion?

13. Why was it recommended that payments to local committees should be in the form of reimbursement for funds spent rather than advancement of money so that the school districts would not need to borrow from banks?

14. Why did it seem desirable to allow large discretionary powers to state boards in determining standards in accordance with which vocational education is to be conducted?

15. What main qualifications would you lay down for: (a) Members of school boards in cities or towns conducting industrial education; (b) members of advisory committees to function in the same school districts?

16. If attendance is to be free upon state-aided vocational schools, who should pay for the transportation of persons attending these schools, but residing at some distance from the school? If you believe that transportation should be paid, between what ages would you make that regulation effective?

17. What is the probable future trend in trade training for women and girls?

18. What regulations are laid down by state laws concerning the employment of women and girls?

19. Make a study of the State Vocational Education Act and compare it with the principles underlying vocational legislation as presented at the Philadelphia meeting of the National Society.

FOR SUPPLEMENTAL READING

Lee, Edwin A. *Objectives and Problems of Vocational Education.* McGraw-Hill Book Co., 1928.

The following bulletins of the National Society for the Promotion of Industrial Education may be available in libraries or in private collections; they are given by number.

1. *Proceedings of the Organization Meetings.*
2. *A Selected Bibliography on Industrial Education.*
3. *A Symposium on Industrial Education.*
4. *Industrial Education for Women.*
5 and 6. *Proceedings of the First Annual Meeting, Chicago.*
7. *General Information Regarding the National Society for the Promotion of Industrial Education.*
8. *Education of Workers in the Shoe Industry,* by Arthur D. Dean.
9. *Proceedings of the Second Annual Meeting, Atlanta.*
10. *Proceedings of the Third Annual Meeting, Milwaukee.*
11. *A Descriptive List of Trade and Industrial Schools in the United States.*
12. *Legislation upon Industrial Education in the United States.*

13. *Proceedings of the Fourth Annual Meeting, Boston, Mass.*
    Part I. *Trade Education for Girls.*
    Part II. *Apprenticeship and Corporation Schools.*
    Part III. *Part-time and Evening Schools.*
    Part IV. *The Social Significance of Industrial Education.*
14. *The Trade Continuation Schools of Munich.*
15. *Proceedings of the Fifth Annual Meeting, Cincinnati, O.*
16. *Proceedings of the Sixth Annual Meeting, Philadelphia, Pa.*
17. *The Short-Unit Course in Part-time and Evening Schools.*
18. *Proceedings of the Seventh Annual Convention, Grand Rapids, Mich.*
19. Revised Edition, of *Selection and Training of Teachers for State Aided Industrial Schools.*
20. *Selection and Training of Teachers for State Aided Vocational Schools for Boys and Men.*
21. *Report of the Minneapolis Survey.*
22. *Proceedings of the Ninth Annual Convention, Minneapolis, Minn.*
23. *Evening Vocational Schools for Girls and Women,* Revised Edition.

CHAPTER IX

THE AMERICAN VOCATIONAL ASSOCIATION AND RELATED ORGANIZATIONS

Committee on Future Policy.—In response to the resolution adopted by the National Society for the Promotion of Industrial Education at its tenth annual convention held at Indianapolis, President Cheesman A. Herrick appointed a committee of ten representative members to consider the future policy and organization of the National Society.[1] The report of this committee was adopted by the membership in February, 1918, at the Philadelphia convention. At that time the membership had grown to about 1700 persons; it had carried out the major program for which it was organized when the National Vocational Education Act became a reality in February, 1917. Now the problem was, what shall be done next—what shall be the program and how shall it be put into effect?

The committee analyzed the problems under the following heads:[2] (1) Problems arising under the Smith-Hughes Act; (2) problems arising from the war; (3) permanent vocational education problems; (4) need for organization and cooperation; (5) state groups and the National Society; (6) ways by which the existing National Society could be adapted to meet the new situation; (7) in readjustments necessary to meet the new situation; and (8) proposed form for a new organization.

Among the outstanding problems arising under the National

[1] This committee consisted of: Frank V. Thompson, chairman; Mrs. Eva W. White, J. C. Wright, Lewis Gustafson, Alvin E. Dodd, Chas. R. Richards, C. A. Prosser, William C. Redfield, A. Lincoln Filene, and Chas. H. Winslow.

[2] "Report of the Committee on Future Policy, Name and Organization of the National Society for the Promotion of Industrial Education." Published by the Association.

Vocational Education Act of 1917 were the facts that when the law went into effect only eight states had developed state-aided systems for vocational education, that these would need to be modified, and that new state programs would have to be organized in the other states. Our participation in the World War made it necessary to increase production greatly and to find new and more efficient ways of getting results in production work. Specialization in industry was increased in many lines of work. New workers had to be trained. The outstanding problems of the time were meeting the increased demand for food and for industrial output.

Many of the war-time problems were merely permanent problems in more acute form. The need for vocational education existed before the war and after it as well as while it was in progress; it was only a matter of relative urgency. About eight million women and girls were engaged in wage-earning occupations according to the 1920 census. Would there be more or less in the future? And what should be done about it? What should be done in the way of training for specialized employment? What can be done for those handicapped both through war and through accidents taking place constantly in civilian employment? These and other problems had been by no means solved.

The committee studying these matters concluded that the outstanding problems of twentieth century industrial conditions could be solved only through cooperation. Proper standards, fundamental principles and policies have to be evolved through group action. The National Vocational Education Act provided federal aid for trade and industrial, homemaking and agricultural education. It was felt that the natural development that would come about in these fields of vocational education should be recognized in the National Society.

The National Society for Vocational Education.—The National Society for the Promotion of Industrial Education had already functioned effectively for ten years; it had done a commendable piece of work; it had achieved national recognition and standing. What could have been more appropriate, there-

fore, than to expand its functions to meet the newer conditions? The Committee on Future Plan, Policy and Organization recommended, and its recommendations were approved by the membership, that the name of the society be changed to National Society for Vocational Education.

In scope it was to include the vocational subjects mentioned in the National Vocational Education Act. The objects were set forth as follows: "(1) To afford all those who are interested, opportunities for the presentation and discussion of the various problems of vocational education; (2) to make available the results of the experience of those working in the various fields of vocational education, both in this country and abroad."

Membership was open to all persons who were interested in vocational education.

David Snedden, President.—Dr. David Snedden was selected as the first president of the National Society for Vocational Education. Emphasis was given to the relationship between the former and the new society by continuing the numerical order of the annual conventions. Thus the next annual convention held in February, 1919, at St. Louis became the "Twelfth Annual Convention of the National Society for Vocational Education."

Dr. Snedden gave out a statement to the membership to the effect that the executive committee had come to the conclusion that the amended constitution as adopted the preceding year at Philadelphia needed modification. This action was taken at the St. Louis meeting.

Dr. Snedden served as president for two years. At the time of his retirement from that office, Dr. C. A. Prosser paid him the following tribute:[3]

I move that this business meeting of the National Society as a closing act express its high appreciation of the services rendered by Dr. Snedden as President during the past two years. Assuming a second to this motion, I desire from my own personal standpoint to say a few words regarding our presiding officer.

[3] National Society for Vocational Education, Minutes of the Annual Business Meeting, Chicago, Saturday, February 21, 1920.

To many of us he is beloved personally for his qualities as a man; his fairness, his geniality, his consideration, his just treatment of all.

There are some of us here who have been closely associated with him in many ways during the last ten years and can therefore speak by the card. To me he has been successively teacher, superior officer and colleague. Like others who are present, I owe him much professionally.

He has been the outstanding far-visioned thinker in the field of vocational education who has stimulated us at the same time he has ridden with entire fairness over our old, out-worn ideas. He has cleared our thinking and has set our feet as we wandered upon the solid facts of modern economic and industrial life and the broad fundamental principles of democracy and education upon which any satisfactory solution of our problems must rest.

The Vocational Education Magazine.—It was first suggested at the St. Louis convention that a monthly journal be issued by the society, and that it have special divisions or departments, each devoted to one of the major forms of vocational education recognized in the national act. This magazine was first published when Dr. Lewis A. Wilson was president of the association. It was of inestimable value to persons interested in vocational education. It gave the latest thoughts of leaders in the various phases of vocational education and it represented one of the outstanding achievements of the society. Its editorial staff was comprised of:

Editor-in-chief—David Snedden
Editor, Department of
Agricultural Education—George A. Works
Commercial Education—F. G. Nichols
Homemaking Education—Mildred Weigley
Industrial Education—C. A. Prosser, assisted by Wesley A. O'Leary and Edwin A. Lee
Part-time and Continuation Education—Robert J. Leonard, assisted by R. L. Cooley and Owen D. Evans
Training in Industry—C. R. Allen, assisted by Harry H. Tukey and Dorothy Pope.

A few changes and some additions were later made to the editorial staff. The Vocational Education Magazine was issued as a monthly journal on the basis of ten copies per year, the first coming out in September, 1922, and the last copy being the

June, 1924, issue. The magazine thus was in circulation for two years. The fact that it was discontinued was a source of regret both to those who had served it and those who read it. It was found to be too expensive for the society to continue to sponsor a magazine of the quality that was issued. Then, too, two other magazines, the Industrial Arts Magazine and the Industrial Education Magazine, expanded and improved their publications so that there was less need than formerly for the society to issue its own professional magazine. The Vocational Education Magazine was essentially a magazine for leaders—for those concerned with developing principles, standards, and policies; and for those who had supervisory and administrative problems to solve in conducting programs of vocational education.

Affiliated Organizations.—At the annual business meeting of the National Society for Vocational Education, held at Kansas City in January, 1922, President Lewis A. Wilson spoke of the period of transition through which the society was passing. He especially emphasized the desirability of having affiliated vocational education associations in every state. Twelve such organizations with an approximate membership of 1,000 persons had already been formed up to that time. By having affiliated organizations in each state, the National Society would be greatly strengthened, and such relationships would likewise prove of value to the state associations. Through increased numbers the National Society could operate more efficiently, and could serve the country in a larger way.

In addition to the state vocational education associations that were directly affiliated with the National Society for Vocational Education there were others who cooperated more or less through joint meetings and otherwise. To this group belong the Vocational Education Association of the Middle West, the American Home Economics Association, and the National Vocational Guidance Association. All of the latter three were, of course, independently organized.

Relationship to Federal Board.—There has always been a cordial and close working relationship between the National

Society under its various names and the Federal Board for Vocational Education. The latter usually calls a regional conference of its staff members in connection with the annual conventions of the National Society. These meetings are open to the public and are largely attended by representatives of vocational education, and vocational teacher training from the various states.

On various occasions the National Society has been called upon by the Federal Board for recommendations, and the society has also supported the Federal Board by endorsing the program and the achievements of the Federal Board. Being organized independently the National Society has been in the position of serving as an ideal organization for developing fundamental principles, acceptable standards, progressive policies, and an "esprit de corps" or spirit of common devotion among those who are engaged in one way or another in vocational education.

Last Years of National Society.—The last years during which the National Society for Vocational Education operated under that name were years in which much was accomplished toward developing breadth of view and cooperative feeling among the various vocational education groups, such as those interested in agriculture, homemaking, commercial work, and trade and industrial training. The annual conventions held in Detroit, Buffalo, Cleveland and Indianapolis from 1923 to 1925 inclusive were among the most successful ones sponsored by the National Society. Through them Presidents Lewis A. Wilson, Charles A. Prosser and Lindley H. Dennis gave additional evidence of their ability as organizers and administrators.

For approximately twenty years, from 1906 to 1926, the National Society had operated under various names. The time was now at hand when another modification in organization was about to take place.

The Vocational Education Association of the Middle West.—In order to understand the origin of the present outstanding national professional association in vocational education —the American Vocational Association—it is necessary to study, at least briefly, the lineage from whence the A.V.A. has come.

On the one side its ancestry goes directly to the National Society for Vocational Education; on the other side, it goes back to the Vocational Education Association of the Middle West.

The latter association had its origin in 1914, when William Bachrach, Albert G. Bauersfeld and Wilson H. Henderson were pursuing work at the University of Chicago.[4] They frequently met around the luncheon table, and in the course of these discussed problems of vital interest to themselves. Without wishing to short-circuit the work of the National Society, they felt that there was still a need for a regional association that would serve as a clearing house for vocational education problems as they existed in the states of the Mississippi Valley. Conditions in the Middle West were different in many respects from those in the East, the South and the Far West. That their conclusions were sound can be seen from the record made by the association.

The first meeting of the Vocational Association of the Middle West was held in February, 1915, at the Hotel La Salle, Chicago. William J. Bogan was the first president; Albert G. Bauersfeld was business manager, and Miss Anne S. Davis was the first secretary. A few years later Leonard W. Wahlstrom was made secretary and held that position until the association affiliated with the National Society to form the American Vocational Association. It means a good deal to the welfare of an association to have as secretary, for a period of years, a man such as Mr. Wahlstrom demonstrated himself to be.

The new association had good leadership and an enthusiastic membership, so that in the course of a half dozen years its membership and the attendance it secured at its annual conventions rivaled those of the National Society for Vocational Education.

Publications.—Due to good business management, founded on the idea of low dues and real service to commercial exhibitors, the association found itself financially able to attract speakers of national reputation to the conventions, and to issue a series of monographs dealing with outstanding problems of vocational

[4] Reprint from an Editorial in the Manual Training Magazine, April, 1922, "The Vocational Education Association of the Middle West."

education, vocational guidance and other subjects of interest to vocational teachers and administrators. A list of these is to be found at the end of this chapter.

Merging of Associations.—For several years more the problem of how best to meet the professional needs of the vocational education groups through national, regional and state associations was a matter of earnest discussion. There was evidently a need for local, state and regional meetings as well as for a strong national association. After careful consideration on the part of both associations they agreed, in 1926, to join their forces and reorganize along lines that appeared to further the best interests of everyone concerned. This new national association would plan to hold its annual conventions in a different region of the country each year so that the teachers of each region could at least attend a national convention about once in four years, when it would be held relatively near, and, in addition to this, state and local representatives, in smaller number, could represent their districts at the national conventions held in other regions of the United States.

Thus, again in the interests of a growing program of vocational education that was national in scope, two associations, the National Society for Vocational Education and the Vocational Education Association of the Middle West joined their forces, and pooled their resources in the one national organization that we have today—the American Vocational Association.

The American Vocational Association.—Since December, 1926, the American Vocational Association has been the only national association devoted exclusively to furthering vocational education. At the time it was formed there were 15 affiliated state organizations.[5]

The following objectives are outlined in the Constitution:

The Objects of this Association shall be:

(a) To assume and maintain active national leadership in the promotion of vocational education.

[5] American Vocational Association News Bulletin, Vol. 1, No. IV, Preconvention Number, November, 1926, pp. 12-13.

(b) To render service to state or local communities in stabilizing and promoting vocational education.
(c) To provide a national open forum for the discussion of all questions involved in vocational education.
(d) To unite all the vocational education interests of the country through membership representative of the entire country.[6]

As in the parent organizations, membership is open to all persons interested in vocational education. Membership through an affiliated organization is one dollar per year, whereas direct membership is three dollars per year. This difference in fees is made possible by the reduced costs per person brought about by large group memberships.

Representative membership for the whole country is secured by the provision for a House of Delegates which transacts the business of the association and which is made up of: (1) The state director from each state; (2) presidents of affiliated associations; and (3) one delegate for each twenty affiliated members or major fraction thereof.

The following six types of education are officially represented through a vice-president: agricultural education, commercial education, home economics education, industrial education, part-time schools, and civilian vocational rehabilitation. There is also a standing committee of five members for each of these types of education and in addition one for vocational guidance.

News Bulletin.—The American Vocational Association publishes a "News Bulletin" on a quarterly basis. It is issued through the office of the secretary of the association. In addition to current news and advertisements the bulletin contains articles dealing with various phases of vocational education. In addition to the News Bulletin the association publishes Proceedings of its annual conventions.

Summary.—The American Vocational Association traces its ancestry, on the one hand, through the National Society for Vocational Education directly to the National Society for the Promotion of Industrial Education, founded in 1906. On the

[6] *Ibid.*, pp. 16-17. For a diagrammatical outline of the A.V.A. see its News Bulletin, Vol. III, No. 3, August, 1928.

other hand it goes back to the Vocational Education Association of the Middle West. From an association primarily concerned, at first, with industrial education alone there has sprung a truly national association directly concerned with all phases of vocational education of less than college grade.

The American Vocational Association is today playing a leading part in shaping programs of vocational education. This is done through legislation, sponsored by the association, through discussions, conferences, interviews, and through the printed

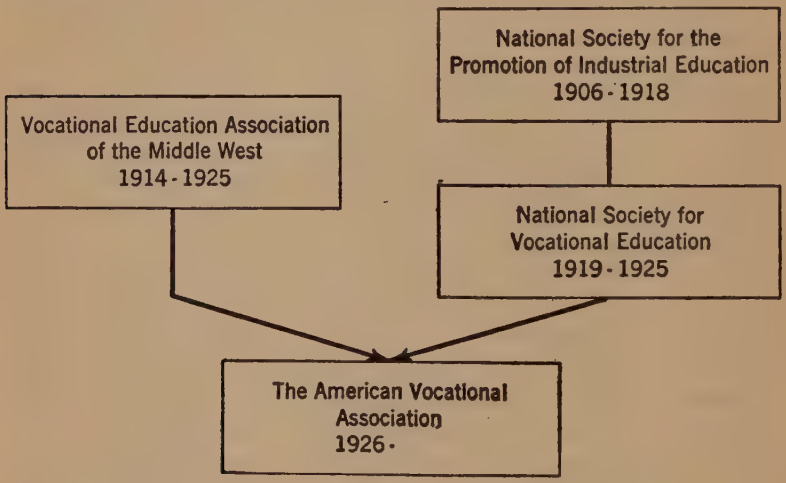
National Society for the Promotion of Industrial Education 1906-1918
Vocational Education Association of the Middle West 1914-1925
National Society for Vocational Education 1919-1925
The American Vocational Association 1926-

Diagram 1. Showing the Lineage of the American Vocational Association

page. There is probably no better way for teachers, supervisory and administrative officers interested in vocational education to keep in touch with the latest thought and developments in the field than through active membership in the American Vocational Association. As the only national association exclusively devoted to the furtherance of vocational education open to teachers and administrators alike, it deserves the active support of all persons interested in those fields of education. Professional growth comes in part through reading professional liter-

TABLE VII. CONVENTION CITIES AND PRESIDENTS OF THE NATIONAL SOCIETY FOR THE PROMOTION OF INDUSTRIAL EDUCATION, THE NATIONAL SOCIETY FOR VOCATIONAL EDUCATION, AND THE AMERICAN VOCATIONAL ASSOCIATION FROM 1906 TO 1930

No.	Year	Convention City	President	N.S.P.I.E.
1	1907	Chicago	Henry S. Pritchett	"
2	1908	Atlanta	Carrol D. Wright	"
3	1909	Milwaukee	Alexander C. Humphreys	"
4	1910	Boston	Charles R. Richards	"
5	1911	Cincinnati	James P. Munroe	"
6	1912	Philadelphia	Wm. C. Redfield	"
7	1913	Grand Rapids	Wm. C. Redfield	"
8	1914	Richmond, Va.	Wm. C. Redfield	"
9	1915	Minneapolis	Wm. C. Redfield	"
10	1916	Indianapolis	Wm. C. Redfield	"
11	1917	Philadelphia	Cheesman A. Herrick	"
12	1918	St. Louis	David Snedden	N.S.V.E.
13	1919	Chicago	David Snedden Charles A. Bennett*	" V.E.A.M.W.
14	1920	Atlantic City	Wm. J. Bogan	N.S.V.E.
15	1922 (Jan.)	Kansas City, Kan.	Lewis A. Wilson	"
16	1922 (Dec.)	Detroit	Lewis A. Wilson†	"
17	1923	Buffalo	Chas. A. Prosser	"
18	1924	Cleveland	L. H. Dennis	"
19	1925	Indianapolis	L. H. Dennis	"
1	1926	Louisville	Edwin A. Lee	A.V.A.
2	1927	Los Angeles	Edwin A. Lee	"
3	1928	Philadelphia	R. L. Cooley	"
4	1929	New Orleans	R. L. Cooley	"
5	1930	Milwaukee	Paul Chapman	"

* Joint Meeting of the National Society for Vocational Education and the Vocational Education Association of the Middle West.

† Second joint meeting with the V.E.A.M.W.

ature, and by associating with others interested in types of activity similar to one's own.

QUESTIONS AND PROBLEMS

1. What organization, if any, in your state is affiliated with the American Vocational Association?

2. Describe the organization of this state association.

3. Why is it desirable to have local groups or associations of vocational and related subjects teachers affiliated with the state vocational education association?

4. What advantages, if any, are there for the class-room or shop teacher in holding membership in a state vocational education association?

5. Make a diagram of the plan of organization of the American Vocational Association.

6. Study the proceedings of the A.V.A. and report upon one of the articles found therein.

7. Give a report upon "Affiliated State Associations" as outlined by Z. M. Smith, Secretary of the A.V.A. in Volume III, Number 3, of the Association's News Bulletin, August, 1928.

8. Report upon the Vocational Association of the Middle West giving a detailed report of its purposes, plan of organization, scope and achievements.

9. Study recent News Bulletins and Proceedings of the A.V.A. to determine the nature of current problems in industrial education. Make a list of these.

FOR SUPPLEMENTAL READING

American Vocational Association. See *News Bulletins* issued quarterly, and *Proceedings* published annually.

National Society for Vocational Education. *The Vocational Education Magazine.* Published by J. B. Lippincott Co., Philadelphia, from September, 1922, to June, 1924.

Vocational Education Association of the Middle West. See its Proceedings of the Third Annual Convention, January 18, 19, 20, 1917, Chicago. Also the following "Monographs on Vocational Education."

1921 Series

1. *Report of Committee on Teaching Social Science in High Schools and Industrial Classes.* By Ruth Mary Weeks, John R. Commons and Frank M. Leavitt.

2. *Part-Time Education.* By George F. Buxton, D. J. MacDonald and Nellie M. Clark.

1924 Series

1. *The Family Life and the Teaching of Home Economics.* By Marion E. Turner, Florence Sample Fleming, Nona E. Goodwin and Mabel Lawrence Evans.

2. *Apprentice Training in the Building Trades.* By D. H. Sawyer, Dwight L. Hoopingarner, Edward F. Kloter, D. Knickerbacher Boyd, G. A. McGarvey, L. H. Dennis and Charles W. Sylvester.

3. *Contributions to Vocational Guidance.* By Joseph V. Hanna, A. M. Simons, Edgar L. Yeager and Douglas Fryer.

4. *Some Industrial Education Problems.* By Edwin A. Lee, David Snedden, E. L. Bowman, and R. W. Selvidge.

1925 Series

1. *The Vocational Schools of Sweden.* By Alex Berglund, translated by Emanual E. Ericson.

2. *Some Problems in Vocational Guidance.* By W. S. Vivian, Emanual E. Ericson, G. M. Hoyt, F. M. Pepper, H. G. Kenazy, Robert H. Rodgers, Florence E. Clark.

3. *Is the Need for Industrial Education Decreasing?* By Paul W. Brown.

CHAPTER X

NATIONAL VOCATIONAL EDUCATION ACTS

Education a State Responsibility.—Cubberley and Elliott have pointed out that: "the state approaches democracy in direct proportion to the universality of its education; education becomes universal just to the degree to which it is regarded as one of the essential functions of the state."[1] As democracy in government and in education has grown so also has developed in America, even from Colonial times onward, the conviction that education is the proper function of the state, using that term in its broad sense. As pioneer conditions gave way to more settled modes of life, as settlements became more densely populated it became increasingly apparent that people could not be left alone to do as they saw fit. There were certain matters that had to be looked after for the common good. Education was one of these.

The federal Constitution makes no direct mention of education. Thus, indirectly, in accordance with the tenth amendment to the constitution, public education is left to the various states, for the amendment reads as follows: "Article X. The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."[2]

Also a Federal Function.—Even though public education in America is rightfully regarded as a state function does that in any way signify that there are not national aspects to it—that there is no federal interest and responsibility? In order to answer this question it may be well to go back to the time when educational grants were first sought by the states from the fed-

[1] Cubberley, Ellwood P., and Elliott, Edward C. "State and County School Administration," p. 3. The Macmillan Co., 1915.

[2] *Ibid.*, p. 12.

eral government. From about 1802 onward for some years Congress received numerous petitions for educational aid. They were usually petitions for land the proceeds of which were to be devoted to furthering education. It was not, however, until 1862 that the first bill giving federal aid to education was passed by both houses of Congress, and approved by President Lincoln on July 2 of that year. The Act was known as the Morrill Act, or Land-Grant Act of 1862.

The First Morrill Act.—This Act, named after Senator Justin S. Morrill of Vermont, was the original land-grant act. It was designated as follows: "An Act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts."

For present purposes our chief interest in this act, in the Hatch Act, the second Morrill Act, the Adams Act and in the Smith-Lever Act, all of which will be briefly mentioned, lies in the fact that they represent concrete examples of federal aid for vocational education. To be sure it was vocational education of college grade, but it was federal aid to vocational education just the same.

The Hatch Act.—This act was passed in 1887. It appropriated $15,000 in money to each state for an agricultural experiment station. This sum was later increased. The purpose of establishing experiment stations was expressed in Section 1 of the Act as follows: "That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

The Second Morrill Act.—The second land-grant act was passed on August 30, 1890, during the administration of President Harrison. It was set forth in the following terms: "An Act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts established under the provisions of an act of Congress approved July second, eighteen hundred and sixty two."

In accordance with the provisions of this act each state and territory received $15,000 per year, with an automatic increase of $1,000 per year until the year 1900. Thereafter each state and territory received $25,000 annually until 1906 when a further modification was put into effect.

The Adams Act.—In accordance with the provisions of the Adams Act the original $15,000 to each state provided by the Hatch Act was increased to $30,000.

The Nelson Amendment.—This amendment passed in 1907 provided an additional increase of federal aid for the land-grant colleges. The former grant of a maximum of $25,000 per state was raised to $35,000 per state with annual increases of $5,000 until $50,000 was reached.

The Agricultural Extension Act.—This act passed in 1914 is commonly known as the Smith-Lever Act. It provides for a program of cooperative extension work in agriculture and home economics. It defines the latter as follows in Section 2: "That cooperative agricultural extension work shall consist of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstrations, publications, and otherwise."

Resumé of Grants to 1917.—The early federal grants in aid of education are characterized by very few restrictions imposed by Congress. Beginning with the Smith-Lever Act of 1914 a number of restrictions were inserted seeking to safeguard the use of federal funds for definite purposes specified in the act. Experience has shown that it is desirable to have legislation so clearly defined as to purpose that there can be no question about the meaning of the various provisions of an act.

All of the acts and amendments mentioned deal with vocational education of college grade or with education administered by colleges and universities. It is easily understood how this should be the case, for traditionally there was much emphasis on training leaders at public expense as distinguished from train-

ing all persons for service in a democratic society. Within the last decade or two there has been a tremendous development in public secondary education, with a changing attitude toward public responsibility for vocational education of less than college grade.

Commission on National Aid.—At this point it is in order to refer back to Chapter VIII, "The National Society for the Promotion of Industrial Education." It will be remembered how the National Society labored for years for the passage of the federal vocational education bill. About this same time the Smith-Lever Bill was also before Congress. We have shown that a number of federal grants had been made for vocational education of college grade. But although a considerable number of persons favored that legislation there was another large group who were afraid that the passage of such national legislation would reduce to a scrap of paper the principle of state's rights. The logical procedure seemed to be to appoint a commission to thoroughly study the question of need for national aid for vocational education.

The Commission on National Aid to Vocational Education was created by act of Congress, January 20, 1914.[3] Pursuant to the act President Woodrow Wilson appointed the following representative commission.

Senator Hoke Smith, Georgia.
Senator Carroll S. Page, Vermont.
Representative D. M. Hughes, Georgia.
Representative S. D. Fess, Ohio.
John A. Lapp, director of Indiana Bureau of Legislative Information, Indianapolis, Indiana, and secretary of the Indiana Commission on Industrial Agricultural Education, 1912.
Miss Florence M. Marshall, director of the Manhattan Trade School for Girls, New York City, and member of the Massachusetts Factory Inspection Commission, 1910.
Miss Agnes Nestor, president of the International Glove Workers' Union, Chicago, and member of the Committee on Industrial Education, American Federation of Labor.

[3] Report of the Commission on National Aid to Vocational Education (Volumes 1 and 2), Volume 1, p. 9. House Document 1004. Washington Government Printing Office, 1914.

Charles A. Prosser, secretary of the National Society for the Promotion of Industrial Education, New York City.

Charles H. Winslow, special agent, Bureau of Labor Statistics, Washington, D. C., and member of the Massachusetts Commission on Industrial Education, 1906-1909.

The commission organized on April 2, 1914, electing Senator Hoke Smith as chairman. An office and statistical staff of 45 persons was engaged to assist the commission in its work. By holding morning, afternoon and frequently evening sessions the commission was ready to report on June 1—two months from the time it organized.

The commission decided to address itself to the following questions which were of outstanding importance:

1. To what extent is there a need for vocational education in United States?
2. Is there a need for national grants stimulating the States to give vocational education?
3. What kinds or forms of vocational education should be stimulated by national grants?
4. How far can the federal government aid through expert knowledge vocational education in the various States?
5. To what extent should the federal government aid the states through national grants for vocational education?
6. Under what conditions should grants to the states for vocational education be made?

Findings of the Commission.—The commission set forth its findings in detail in the report to Congress, reference to which has been made.[4, 5] There was by that time a very strong public sentiment in favor of vocational education—one that the National Society for the Promotion of Industrial Education had a large share in fostering. The need for vocational education of less than college grade was, of course, quite obvious to most

[4] *Ibid.*, p. 10.

[5] See also, Prosser and Allen, "Vocational Education in a Democracy," Chapter XV, for an excellent presentation of the subject.

if not all of the members of the commission. But to know a fact, and to be able to convince others perhaps contrary minded are two different things. The commission by answering the six major problems in a careful and systematic way, and by verifying their findings through public hearings, questionnaires, and discussion was able to present to Congress a convincing report—one that unquestionably helped to convince many that vocational education, such as was contemplated, was really needed and that their fears of infringements upon the principles of State's rights were not well founded.

The answers to the commission's findings are to be found in the principles, the policies, and the provisions of the National Vocational Education Act (of 1917) itself. The recommendations, as Dr. Prosser has pointed out, were adopted almost unanimously by both branches of Congress, and became the National Vocational Education Act of 1917, sometimes known as the Smith-Hughes Act.

Principles Underlying Act.—Students of educational legislation will be particularly interested in the progress made in the provisions of the National Vocational Education Act over those incorporated in the federal grants made between 1862 and up to 1917. The National Vocational Education Act has shown the advantage of principles such as the following contained in it:[6]

1. Federal Partnership.—The act does not take away rights or privileges from any state. It does not seek to usurp state authority, nor to control the states. What it does seek to do is to set up a mutually satisfactory, and mutually necessary and helpful arrangement.

2. Respects State's Rights.—The provisions of the act are not obligatory upon any state. Every state had the right to accept or reject the proposition; every state has a right to accept the provisions for specified types of vocational education, at the same time it does not need to meet the requirements of other types. For example one state will include provisions for the general industrial school in its state plan whereas another will

[6] *Ibid.*, p. 427.

not do so, preferring to use its federal aid upon other types of industrial education.

3. The State Provides the Plan.—It is not a case of the federal government drawing up a plan or program for every state to follow. Each state draws up its own state plan. Fortunately the federal act has set forth a number of minimum standards that must be met if the state desires federal subsidy under the act. But probably no two state plans are exactly alike and there is often great difference in them. This is exactly as it should be. Such an arrangement permits flexibility, encourages initiative and stimulates growth.

4. Proper Expenditures Safeguarded.—Under the act, for the first time in the history of federal educational grants, there were set up fairly adequate conditions safeguarding the proper expenditure of the money for the purposes for which it was appropriated.

5. Efficiency Safeguarded.—The provisions of the act are such that a reasonable, minimum efficiency is safeguarded. Thus, there are certain minimum standards for teachers, courses of study, length of the school day, and of the school term all of which affect the efficiency of the program.

6. Federal Money Matched.—By requiring that the federal dollar be matched by state or local funds at least equal in amount there has been incorporated into the act a fundamental principle. State or local effort must be put forth to equal federal effort—a principle now well recognized in public as well as in private grants in aid.

7. Reimbursement.—Payments to the states are made in the form of reimbursement for funds already lawfully spent, rather than being made for expenditures that are not yet contracted. This principle is one that was recommended by a committee of the National Society for the Promotion of Industrial Education at the Philadelphia convention in 1912.[7]

The George-Reed Act.—In 1929 the American Vocational Association appointed a legislative committee to work toward

[7] See Chapter VIII, item 15, p. 105.

further aid for vocational education. The personnel of this committee was as follows:

Legislative Committee, 1929
of the American Vocational Association

Chairman, L. H. Dennis, deputy state superintendent of public instruction, Harrisburg, Pennsylvania.
Paul W. Chapman, state director of vocational education, Athens, Georgia.
Wesley A. O'Leary, state director of vocational education, Trenton, New Jersey.
John Callahan, state superintendent of public instruction, Madison, Wisconsin.
Dr. L. A. Wilson, state director of vocational education, Albany, N. Y.
Miss Jessie Harris, University of Tennessee, Knoxville, Tenn.
C. M. Miller, state director of vocational education, Topeka, Kan.
E. E. Gallup, state supervisor of agricultural education, Lansing, Michigan.
Ray Fife, state supervisor of agricultural education, Columbus, Ohio.
Miss Wylie B. McNeal, University of Minnesota, Minneapolis, Minn.
L. R. Humphreys, state supervisor of agricultural education, Salt Lake City, Utah.
Miss Maude I. Murchie, state supervisor of home economics education, Sacramento, California.
Dr. C. A. Prosser, William Hood Dunwoody Institute, Minneapolis, Minnesota, consultant and advisor to the committee.
Dr. R. L. Cooley, president, American Vocational Association, member, ex-officio.

The effort of the committee resulted in the passage of the George-Reed Act. In accordance with the provisions of this act approved February 5, 1929, the programs of vocational agricultural and vocational home economics education were given additional support, the sum of $500,000 was appropriated for the year ending June 30, 1930, and the sum of $500,000 additional to that granted the preceding year, for four years. The fifth allotment will thus be five times the first or $2,500,000. One-half of this sum is allotted to the states and territories in the proportion that their farm population bears to the total farm population of the United States, exclusive of the insular possessions. This is for agricultural education. The other half is

allotted on the same basis except that of rural instead of farm population, and is for aiding home economics education.

In addition to the funds mentioned there was allotted to the Federal Board for Vocational Education the sum of $100,000 annually, as long as the act was made effective, for the purpose of carrying out the provisions of the act.

Though no direct allotment in this act was made for industrial education, this legislation, nevertheless, increased the amount of vocational industrial funds available for trade and industrial education purposes in the following manner. The National Vocational Education Act, Section 3, reads: "That not more than twenty percentum of the money appropriated under this act for the payment of salaries of teachers of trade, home economics, and industrial subjects, for any year, shall be expended for the salaries of teachers of home economics subjects." Now that a separate appropriation has been made through the George-Reed Act, there will not be the same need for subsidizing home economics education from funds that can be used for trade and industrial education.

Grants in Perpetuity.—The National Vocational Education Act of 1917, the Smith-Lever Act of 1914, and other earlier Acts are grants in perpetuity. That is, they are endless, continuing on year after year, unless they should be revoked in a legal manner. Members of the 1929 legislative committee of the American Vocational Association found in Congress a changed point of view concerning this feature of grants. There is reluctance to make grants in perpetuity. Instead it is considered better practice to make definite allotments for a shorter time, such as five years, and then to base future grants upon conditions as they will then exist.

Bill for Industrial Education.—There is now under consideration by the American Vocational Association a bill seeking "To provide greater opportunity in education through cooperation with the states in the further development of vocational education for trade, industrial, and commercial pursuits." [8] At this

[8] From a preliminary or tentative draft of the Bill now under consideration.

time it is hardly desirable to discuss in detail the provisions of this bill since they may be modified materially. But it can be stated that it is the hope of those sponsoring the bill that it can be drawn so that it will run for the same length of time as the George-Reed Act. The bill also hopes to stimulate particularly training for persons who have left the full-time schools for employment.

Federal Aid.—In studying the provisions of federal vocational education acts from 1862 onward to the present time, one can see that it has long been an established practice for the federal government to aid the states through land grants and through money grants. The growth of federal grants has been great. The total payments from the United States Treasury, exclusive of land grants, was approximately $8,000,000 in 1912, while at the end of the fiscal year 1927 they amounted to $136,659,786.47.[9] Only a little more than five per cent of this was spent in 1927 for vocational education under the Smith-Hughes Act, whereas nearly sixty per cent was spent in federal aid for highway construction and twenty-three per cent for the National Guard.

Recent legislation carrying federal aid has at least three conditions that must be met by the states that accept the provisions of the grants made. These provisions are:

1. The state legislature must accept the federal act, and must make provision for state supervision and control of the funds expended.
2. The state must formulate a plan describing how the funds are to be used and setting up conditions for their expenditure.
3. The third principle is that of matching federal funds with state or local funds.

Opposition to Federal Aid.—The early opposition to federal aid was often expressed in the form of fear of infringement upon the rights of local government. There was much talk about state's rights. Just as at present, this talk of in-

[9] Macdonald, Austin F. "Federal Aid," p. 5.

fringement upon state's rights is a "smoke screen" behind which protection is sought for special interests or for states that figure that they lose more than they gain financially through acts carrying federal subsidy for various purposes.

The chief opposition to the principle of federal aid has more recently come from the wealthy eastern states—from the states best able to contribute toward equalizing the burden of education in the United States. These States pay more into the National treasury than they get in return in dollars and cents.

Some of the opposition to federal aid has been based upon the theory that aid to the states should be in proportion to the federal income-tax paid. On this basis there is indeed a great difference between the per cent returned through federal aid and the amount paid in the form of income tax. But as Macdonald has pointed out, such a basis for federal aid is not equitable because the income tax paid by large corporations frequently represents holdings in other states.[10] Thus, a railroad company may have its right-of-way in many states and pay income tax in but one; a large manufacturing concern may have plants scattered over the United States and yet pay income in only one state—and that state may not even have a single plant belonging to the company.

Advantages of Federal Aid.—It is frankly admitted that in accordance with the provisions of federal legislation carrying aid that the wealthier states help to support the poorer ones in the matters covered in the grants. But is that not as it should be? Are these grants not for purposes of promoting the national welfare, and in such matters should there not be an equalization of obligation as well as of opportunity, first within the community, secondly within the state, and thirdly among the states of the Union? In progressive states do not the larger cities help to make possible reasonable educational opportunities in the poorer districts? In the state of Pennsylvania with which the writer happens to be most familiar, as much as eighty-five per cent of a vocational teacher's salary, in the small, poor dis-

[10] Macdonald, Austin F. "Federal Aid," Chapter X, for a detailed discussion of this matter.

tricts, may come from state and federal funds whereas only twenty-five per cent can come from the same funds in case the teacher is employed in the large, wealthy cities of the first class—Philadelphia and Pittsburgh. It should be recorded that this latter state legislation, passed in 1925, met with the approval of those same large cities. If such equalization of educational opportunity is right within a state, why is it not also right among the states?

Another advantage of federal aid is that it: (1) involves setting up a state agency; (2) calls for the preparation of state plans; and (3) brings into action state-wide supervision and control. The advantages of these features should not be underestimated. Federal good roads legislation has helped to stimulate good roads in various states; federal rehabilitation legislation has helped to develop state programs for assisting the handicapped to become once more self-supporting, self-respecting members of society; federal vocational education legislation has been largely responsible for the rapid development in vocational industrial education in the United States in the decade from 1917 to 1927.

Briefly stated, federal aid to vocational education has proven to be desirable for reasons such as the following:

1. It assists materially in developing state and local interest.
2. It helps to secure state legislation in line with the best thought of the leaders of vocational education in the United States.
3. It presents principles and policies that have had and that continue to receive the careful consideration of experts.
4. It establishes minimum standards of a desirable sort—standards that few states may be able to meet in a large way at the outset, but standards that are accepted quickly.
5. It helps to equalize the burden of vocational education among the states.
6. It helps to bring about more democratic programs of education all over the country.
7. It helps to safeguard national welfare by promoting effi-

ciency in vocational pursuits upon which our social, economic and political welfare largely depend.

Soundness of Federal Aid.—In 1922 the Commonwealth of Massachusetts sought to have declared as unconstitutional the Maternity and Infant Hygiene Act, otherwise known as the Sheppard-Towner Act.[11] This action on the part of the attorney general of the state was of vital importance to the whole country, because of the tremendous harm that would result if the complaint had been sustained. It would affect not only that one act, but all acts making grants for educational purposes, beginning with the first Morrill Act of 1862 and continuing up to the time the action was brought. It would affect, among others the National Vocational Education Act. If the Smith-Tower Act was unconstitutional then a dozen or so other federal acts would be unconstitutional. The attack was made on the grounds that the federal act violated the sovereign right of the state of Massachusetts.

We have seen how, on the one hand, education is a state responsibility; on the other hand how one national grant was made after another for purposes of assisting, and cooperating with, the states. For sixty years no state had questioned the right of Congress to pass laws appropriating funds for matters involving the public welfare, as for instance, education and good roads. A matter not expressly defined in the federal Constitution had grown through public opinion and approval to the point where it would have been extreme folly to repudiate what the people had done through their representatives in Congress for sixty years.

The complaint of the Commonwealth of Massachusetts was not sustained, and so, through the failure of this test case, the principle of federal aid is more firmly established than ever.

Summary.—The first federal grants for vocational education were made to establish colleges for teaching agriculture and the mechanic arts. A half-century or more ago there was much

[11] For a masterly discussion of this topic see "The Massachusetts Attack on Federal Aid" by C. A. Prosser, *Vocational Education Magazine*, February, 1923.

adherence to the doctrine of formal discipline and widespread belief in faculty psychology. Added to this was the influence of tradition which dictated that leaders should be trained first of all and that it was not so important to train the rank and file of people. So, our first approach was vocational education under college auspices. This was about the time of the Civil War. More recently, about the time that America entered the late World War, there was passed the National Vocational Education Act, also known as the Smith-Hughes Act, which provides federal aid for vocational education of less than college grade—vocational education which in the field of trades and industries seeks to prepare very definitely for wage-earning employments.

Familiarity with the earlier acts beginning with the Land-Grant Acts is desirable as it permits one to observe to better advantage the development of the basic principles incorporated in modern national acts providing aid for vocational education.

The National Vocational Education Act represents a half-century or more of experience starting with few federal restrictions and culminating in numerous provisions in the act, all designed to safeguard the proper use the funds involved.

Vocational education is receiving public approval because it helps to provide greater equality of educational opportunity in the sense of making possible more equivalent, as distinguished from literally equal, educational opportunities.

Out of the cooperative partnership fostered by national acts subsidizing vocational education there has emerged a better mutual understanding of how the federal government can assist the states in matters of vital importance not only to the individual states but to the country as a whole.

QUESTIONS AND PROBLEMS

1. Compare the prevailing ideas about industrial training held about 1876 with those advocated at present, and as incorporated in the National Vocational Education Act.

2. What were the real reasons for the opposition to the Sheppard-Towner Act?

3. In what way, if any does legislation such as the National Vocational Education Act encroach upon state's rights?

4. Show how a program of public vocational education will assist in democratizing education.

5. On what grounds is it desirable and necessary for the federal government to participate, through special grants, in vocational education carried on in the states?

6. What objections, if any, can you make to the provisions of the National Vocational Education Act?

7. In what ways have the conditions set up in the National Vocational Education Act been helpful to the development of vocational industrial education?

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CHAPTER XI

THE FEDERAL BOARD FOR VOCATIONAL EDUCATION

Recommendations of Commission.—The Commission on National Aid to Vocational Education, appointed by President Woodrow Wilson in accordance with the provisions of an Act of Congress approved January 20, 1914, made definite recommendations as to how the program of vocational education, that it proposed, was to be administered. Numerous hearings were held to find out both the extent and the limitations of the various educational services that were being rendered by federal agencies such as the United States Bureau of Education in the Department of Interior; the Department of Commerce; the Department of Agriculture; the Navy Department; the Bureau of Labor of the Department of Labor, and the War Department. Each of these departments was furnishing information and advice or had charge of some aspect of education along special lines. The Commission found that in some instances very serious limitations existed that hampered the programs referred to in these hearings. For instance, Commissioner Philander P. Claxton, representing the United States Bureau of Education, was reported to have said: "The Bureau of Education is not prepared to do in an effective way any of the work for which it was established."[1] In other instances there was unnecessary duplication of effort with a consequent waste of public funds. After due deliberation and numerous conferences the Commission proposed that a Federal Board for Vocational Education be established. This recommendation became a part of the National Vocational Education Act passed in 1917.

[1] Report of the Commission on National Aid to Vocational Education, Volume 2, p. 27.

Personnel of the Federal Board.—It was proposed by the Commission that the Federal Board for Vocational Education be composed of the secretaries of five federal departments, four of whom were in more or less intimate touch with the task of supplying expert information and advice to the country for use in various kinds of vocational training.[2] It was felt that this would bring about more intimate cooperation between the various departments and bureaus and result in preventing overlapping and duplication of work. It was realized, also, however, that the secretaries of these departments were busy men, each of whom already had a man-sized job cut out for him in administering his department.

When the National Vocational Education Act was passed the personnel was defined in Section 6 of the Act as follows: "That a Federal Board for Vocational Education is hereby created, to consist of the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Labor, the United States Commissioner of Education, and three citizens of the United States to be appointed by the President by and with the advice and consent of the Senate." It was further specified that one of the three lay members was to represent manufacturing and commercial interests, another agricultural interests, and the third labor.

The personnel of the first Federal Board for Vocational Education was as follows: Secretary of Agriculture, David F. Houston; Secretary of Commerce, William C. Redfield; Secretary of Labor, William B. Wilson; United States Commissioner of Education, Philander P. Claxton; *ex-officio* members; and the following lay members: Charles A. Greathouse, representing agriculture; James P. Munroe, representing manufacture and commerce; and Arthur E. Holder, representing labor.

The First Executive Staff.—The first executive staff was composed of the following persons:

Charles A. Prosser, Director
Layton S. Hawkins, Assistant Director for Agricultural Education

[2] *Ibid.*, Volume 1, p. 61.

Lewis A. Carris, Assistant Director for Trade and Industrial Education
Josephine T. Berry, Assistant Director for Home Economics Education
E. Joseph Aronoff, Secretary of the Board
Charles E. Alden, Chief Clerk.

In the field of trade and industrial education the following persons in addition to Mr. Carris were members of the Federal Board staff: J. C. Wright, Harry Bradley Smith, Benjamin F. Johnson, Roy Dimmitt, Robert J. Leonard, and Mrs. Anna L. Burdick.

Reorganization of Services.—For more than three years the Federal Board for Vocational Education was responsible for the rehabilitation program of soldiers, sailors and marines injured in the War. This program from its beginning in July, 1918, was a large and very difficult undertaking considering the conditions under which the work had to be done. The Board had given its best efforts to this worthy cause. Within the period specified there were registered over 400,000 cases, 390,000 of which had been passed upon. About 116,000 had been placed in training, and at the close of the year 1921 approximately 89,000 persons were in rehabilitation training.[3]

In accordance with an act of August 9, 1921, the vocational rehabilitation of soldiers and sailors was transferred to the newly established Veterans' Bureau.

The Federal Board continued to administer the National Vocational Education Act under which it was created and the Civilian Vocational Rehabilitation Act of June 2, 1920.

Dr. Charles A. Prosser resigned as director on November 1, 1919, and the Board appointed Uel W. Lamkin director of the board, effective July 1, 1920. Mr. Lamkin continued as director until August 10, 1921—the date on which the Veterans' Bureau assumed control of the soldier rehabilitation.

On August 11, 1921, Lewis A. Carris was appointed director

[3] See Federal Board for Vocational Education, Sixth Annual Report, 1922, p. 2.

TABLE VIII. PERSONNEL IN OFFICE OF DIRECTOR SINCE THE FEDERAL BOARD FOR VOCATIONAL EDUCATION WAS ORGANIZED*

Year	Name of Director	Tenure of Office	
		From	To
1917	Charles A. Prosser	Aug. 15, 1917	
1918	" " "		
1919	" " "		Nov. 1, 1919
1920	Uel W. Lamkin	July 1, 1920	Aug. 10, 1921
1921	Lewis A. Carris	Aug. 11, 1921	Feb. 15, 1922
1922	J. C. Wright	April 16, 1922	
1923	" " "		
1924	" " "		
1925	" " "		
1926	" " "		
1927	" " "		
1928	" " "		
1929	" " "		
1930	" " "		

* From the Minutes of the Board through the courtesy of the Director, Dr. J. C. Wright.

of the Federal Board and continued in this position until February 15, 1922.

Following the resignation of Mr. Carris, J. C. Wright was appointed director, effective April 1, 1922. Mr. Wright was a member of the original staff, having come with the board in September, 1917. At the time this book is written he is still the Director having served the board one year as regional agent in the Rocky Mountain Region; one year as special agent for war training in Washington; nearly three years as chief of the trade and industrial education service and eight years as director.

Following the transfer of soldier and sailor rehabilitation work the services of the Federal Board were reorganized under a director of all of the services, and five chiefs of services. With the appointment of Dr. Wright as Director the following staff was created:

J. C. Wright, Director of the Federal Board for Vocational Education
Frank Cushman, Chief, Trade and Industrial Education Service
C. H. Lane, Chief, Agricultural Education Service
Miss A. E. Richardson, Chief, Home Economics Education Service
E. W. Barnhart, Chief, Commercial Education Service
John Aubel Kratz, Chief,[4] Vocational Rehabilitation Service

The change resulted in making the four services of the Board provided for in the National Vocational Education Act directly responsible to the Director of the Board instead of to an assistant director of vocational education, as was formerly the case. The rehabilitation service, provided for in a separate act passed in 1920, also heads up to the Director of the Board.

The Federal Board for Vocational Education is not a part of any other government department or bureau, but has a sep-

[4] See Statement of Policies, Federal Board for Vocational Education, Bulletin 1, 1922 edition, p. 5, Organization of the Federal Board for Vocational Education.

arate and independent status.[5] It derives its authority and its responsibilities directly from the National Vocational Education Act of 1917 and subsequent federal acts dealing with vocational education and civilian rehabilitation.

As has been indicated, the Board is composed of four ex-officio members and three lay members. The latter serve for three years, and are appointed by the President of the United States and confirmed by the Senate. One lay member is appointed annually. The Director of the Federal Board and all staff members are employed under civil service regulations.

The Board is representative in that the various interests such as labor, employer, agriculture, industry and education are represented in the personnel. In addition the Board has made an effort to have a well-balanced staff—one in which the various members supplement each other in training, experience, and personality so as to make an effective, efficient, professional, working team.

In addition to the chiefs of the major services and the field agents, there is an editor and educational consultant. The latter acts in a consulting capacity to the various services of the Board and is in general in charge of the editorial work.

Regional Assignments.—For purposes of carrying out the provisions of the Vocational Education Acts in trade and industrial education, the United States is divided into four regions as follows:

Region No. 1—North Atlantic, 13 states
Region No. 2—Southern, 12 states
Region No. 3—Central, 12 states
Region No. 4—Pacific, 11 states

Each region is in charge of an agent of the Federal Board. The special agent for girls and women serves the entire country to the extent of her ability. It is undoubtedly desirable to do field work on a basis such as just outlined, as it gives each agent the opportunity to do consecutive work rather than have too

[5] Eighth Annual Report, 1924, Part I, "General Report of the Work of the Board."

many persons acting on matters in any given state. The same principle holds true in state supervision—it is usually best to make one person responsible for a given unit of work. It may be desirable, from time to time, to change supervisors or to have them exchange territorial assignments, but for the good of the service that should not be too often, as for example, annually. When an agent must cover territory as large as a dozen states it takes several years to get the necessary background for making decisions and for giving advice that is in line with local needs.

Service to the States.—From the very first the Federal Board for Vocational Education has never lacked work to do. The problems involved in promoting and administering vocational education are sufficient to give each member of the staff more opportunity for service than can be undertaken. Some idea of the types of service rendered by the Board may be gathered from the following list, which is only a partial one.

1. Administration.—The National Vocational Act placed the responsibility for cooperation with the states, in setting up a going program under the act, upon the Federal Board for Vocational Education. The chief functions of the Board are promotion, research and service. The administration of the national program depends directly upon the states. The Federal Board does not presume to exert any administrative control within the states; the Board works with the states as the latter desire and request, in accordance with the provisions of the State Plan. In the early years under the National Act, the Federal Board staff spent much of their time helping the states to organize their programs of vocational education. As competent leadership develops within the states the federal staff finds that it can shift its efforts to other important tasks.

The Federal Board holds regular monthly meetings and such additional special meetings as may be needed to meet the requirements of the work to be done. Matters of policy and action requiring executive approval are as a rule taken up at the regular meetings. The interpretations and rulings of the Federal Board have been set forth in Bulletin 1, "Statement of Policies," which has been revised several times since it was first

published. The bulletin deals with principles, procedures, conditions to be met, absolute standards, discretionary standards, outline of the State Plan and other administrative matters. A copy of the National Vocational Education Act is also included in this bulletin. In order to still further shed light upon a number of problems a number of questions involving policy have been treated in the bulletin in the question and answer form.

The Federal Board must satisfy itself that the funds allotted to the states are spent in accordance with the requirements of the act. This necessitates auditing the accounts, personal visits to see certain instructional work in progress, and conferences with state and local representatives.

2. Regional Conferences.—Each year the Federal Board has held regional conferences with state representatives in order to discuss problems of special interest. The regional conferences on industrial education have usually been held separate from those for agricultural and home economics education. Prior to 1920 these regional industrial education conferences dealt largely with legal and administrative aspects, but more recently the scope of these meetings has been enlarged so that such subjects as conference leader training and industrial teacher training have been given special attention.[6] Technical instruction along different lines has also been included in regional conferences. Special training courses for supervisors and teacher trainers have been held and these conferences were attended by representatives of all of the states.

The regional conferences held by the Federal Board have proven very helpful, both to the states and to the Federal Board. They have helped to develop better understanding, mutual trust, and cooperation. On the one hand they make it possible for the states to present for discussion problems that are of special regional importance; on the other hand, it gives the federal representatives the opportunity to see personally, in a short time, representatives of a number of states, and matters of

[6] Federal Board for Vocational Education, Fourth Annual Report, 1920, p. 28.

federal policy can be discussed in terms of their regional bearings; to both federal and state representatives these conferences afford a valuable opportunity to compare notes, to find out what is being accomplished, and to join in planning to some extent the next steps in the program of vocational education, local, state or national, in which all are vitally interested.

Regional conferences are especially desirable since they enable many state supervisory and teacher-training representatives to attend who cannot go to the annual conventions of the American Vocational Association when the latter are held in places perhaps thousands of miles away.

3. Trade Analysis.—The apprentice training given in a number of trades has been seriously handicapped by insufficient instruction, both on the trade theory and related information side and as regards manipulative skill. One of the outstanding reasons for this has been the lack, in those trades, of carefully made trade analyses and available body of instructional material. Industry has more often analyzed its work from the production standpoint than from both the production and instructional points of view. It is not unusual for expert tradesmen to have difficulty in teaching to apprentices and helpers the things that the expert workers know. The chief reason for this is that no analysis has been worked out listing what is really essential to the trade.

In order to help in this matter the Federal Board has had prepared, by members of its staff working with representative workers in the trade, employers, architects, designers, and others possessing the information needed, a number of bulletins each containing an analysis of some forms of trade or industrial work, together with specimen instructional material, explanatory notes or suggestions as to the purpose of the analyses and how they are to be used. The following is a partial list of such material:

Bulletin 52. Theory and Practice. Outlines of Instruction in Related Subjects for the Machinist's Trade, including General Trade Subjects for Certain Other Occupations.

Bulletin 67. A Survey and Analysis of the Pottery Industry.

Bulletin 69. An Analysis of the Railway Boiler Maker's Trade.

Bulletin 95. Bricklaying. An Analysis of the Trade of Bricklaying, together with Suggestive Courses of Training for Apprentices and Journeymen Workers.

Bulletin 102. Paper Hanging. An Analysis of the Paper Hanger's Trade, together with Suggestive Courses of Training for Apprentices and Journeymen Workers.

Bulletin 106. Stone Setting. The Setting of Cut Stone Trim in Brick Buildings. Specimen Instruction Material for use with Advanced Bricklayer Apprentices and Journeymen Workers.

4. Annual Reports.—Beginning with 1919[7] and annually thereafter the Federal Board has issued its "Annual Report to Congress." These reports contain in brief form the best descriptive and statistical presentation that is available of the progress that has been made in the work for which the Federal Board was created. In January, 1924, the 1923 Year Book was issued to supplement the Annual Reports. The Year Book gives a general description of outstanding developments and a summary of progress for the first five years under the National Vocational Education Act.

5. Other Publications.—The Federal Board issues a number of different series of bulletins including (1) Agricultural Series; (2) Home Economics Series; (3) Trade and Industrial Series; (4) Civilian (Industrial) Rehabilitation Series; and (5) Employment Management Series. Each of these series contains many bulletins dealing with a variety of problems. An index of these is found at the back of a number of the federal bulletins.

The Federal Board also issues a monthly publication entitled the "Library News" which gives a summary of recent literature issued in the various fields of vocational education.

6. Foreman-Training.—Director J. C. Wright, Charles R. Allen, Editor and Educational Consultant, and Frank Cushman, Chief of the Industrial Education Service, assisted by other members of the trade and industrial education staff have put on

[7] This report covered the period February 23, 1917, to June 30, 1917.

numerous demonstration training conferences designed to show how foreman training can be effectively done. The field for this service is large and the purpose in these conferences has been to demonstrate a technique that can be continued by industry, or by industry in cooperation with local or state public vocational education agencies.[8]

7. Conference Leader-Training.—Foreman-training is regarded as one of the best promotional devices to further the whole program of industrial education in any given community. In order to develop foreman-training greatest progress can no doubt be made by training capable men to become leaders in better foremanship, or, to use a better term, to become "conference leaders." In the summer of 1921 the Federal Board called a National Conference at Minneapolis in order to spread, through state supervisors, teacher-trainers and representatives of industry the gospel of conference leader training.[9] Many demonstration conference-leader-training programs have been held by members of the Federal Board staff in various centers in the United States. Several states now have full-time men engaged in training conference leaders. In some instances they devote a part of their time to foreman-training demonstrations. This is at times desirable since different industrial establishments react in various ways. Some want foreman-training by the conference method demonstrated before they will participate in a conference leader program, and the opposite situation is also met.

8. Survey Service.—Another type of service rendered has to do with making simple and inexpensive surveys that have as their chief purpose securing the necessary data on the basis of which programs of vocational education can be conducted that will meet local requirements. The procedure, forms and technique, has been worked out and has been used in a number of states. A modified form of this procedure is used to study indi-

[8] See Federal Board Bulletin 61, "Improving Foremanship." Also Bulletin 127, "Progress in Foreman Training."

[9] Sixth Annual Report, p. 50. See also Bulletin 125, "The Training of Conference Leaders."

vidual plants. The Federal Board has also, from time to time, made available to the states members of its staff to cooperate with state and local school authorities in conducting comprehensive vocational education surveys.

9. Girls and Women.—An appreciable proportion of persons gainfully employed in manufacturing and industrial pursuits is made up of girls and women. The national program for vocational education properly includes service to girls and women who wish to enter, or who have already entered the industrial field of work. Many girls and women prefer industrial employment to working in domestic service. They have shorter hours in industrial work, and often, more important than this, industrial employment permits them to associate more with persons of their own age.

The Federal Board has on its staff a woman expert who devotes full time to industrial education for girls and women. The need for this service has hardly come to the attention of the general public but it must be apparent to those familiar with employment conditions in manufacturing and industrial occupations that great social and economic good may be brought about through such practical industrial training courses. According to the testimony of 98 industrially employed women attending the Bryn Mawr Summer School for Women Workers, two-thirds of them went to work at less than a living wage and only two had received previous training that directly helped them on their first job.[10] The conclusion to be drawn from such testimony as the above—declarations of fact that can readily be multiplied many-fold—is that girls enter industry as a rule without vocational training and without competent vocational guidance. If no trade or industrial training is given to them either before or while employed there obviously results great human and economic loss that we must reckon with more and more. As matters stand at present, not enough attention is being given to suitable industrial training for employed girls and

[10] Quoted from Federal Board for Vocational Education Yearbook, 1923, pp. 284, 285.

women. We are likely to assume that such employment is occupational rather than vocational; that girls will only be industrially employed for a few years until they get married, but is it true that employments open to girls and women are held only by those not married? Is it not desirable to train all persons, both male and female, for some kind of gainful employment?

10. Special Studies.—The Federal Board has undertaken, from time to time, a large variety of special studies, some of which, like trade analyses, surveys, and conference-leader-training have been mentioned. Among other important studies should be mentioned those centering around the field of part-time education. The development in part-time education given on a compulsory basis in America has been truly remarkable since the National Vocational Education Law went into effect. And the progress made has shown conclusively that for youth of adolescent years the compulsory feature is necessary. No such development would have taken place under optional or under permissive-mandatory regulations, as can be proven by the experiences of states that had such regulations. In 1917 there were only four or five states with programs for part-time continuation education; according to the 1928 report of the Federal Board, thirty-six states reported enrollments in such courses.[11]

Another group of special studies have to do with apprenticeship. The first bulletin dealing with this subject as such is an able piece of practical research work prepared by Dr. Jennie McMullin Turner.[12] While the old guild type of apprenticeship is practically gone there is today a growing interest in modern forms of apprentice-training in the skilled trades. Other studies made by members of the Federal Board staff, such as the analyses of specific trades, have, of course, a direct relationship to apprentice training. Cooperative education of the trade extension variety is essentially apprentice training.

Still other studies and investigations have centered around plant training of various kinds. Such training may be designed,

[11] Twelfth Annual Report, Table 4, 1928.

[12] Federal Board Bulletin No. 87, "Apprentice Education," 1923.

for instance, for apprentices, helpers, journeymen, master craftsmen, foremen, and minor executives. Various kinds of assistance in this field of training have been made available to the states.

11. Teacher-Training.—The Federal Board is responsible for administering vocational teacher-training as well as vocational education under the provisions of the National Vocational Education Act, and the Reed-Towner Act. Trade and industrial teacher-training is administered in the states usually in one of two ways: (a) Directly by state departments of public instruction; or (b) through approved, designated teacher-training institutions. It is particularly important that the teacher-training offered shall be given to persons who at the conclusion of their professional training will be competent trade or industrial instructors. In the fields of vocational agriculture and vocational homemaking education, it is quite feasible to require the completion of an approved four-year post-high school training course, but to set such a standard in the field of trade and industrial education would be nothing short of ruinous. To establish attainable standards for various types of trade and industrial teachers, and to approve curriculums for such teachers are matters to which local, state and federal authorities are giving attention. Judging by present practice, the matter of what constitutes the proper core curriculum for the different types of industrial teachers has not been settled to the point where there is evident general agreement, though it is generally agreed that certain courses such as those dealing directly with the science and art of industrial education are needed.

Staff members of the Federal Board have assisted the states particularly through summer session courses given to teachers in service and to prospective vocational industrial teachers. The greatest difficulty, in many ways, is encountered in securing well-trained shop teachers. They are not as a rule attracted to the full-time curriculums because most men with good trade backgrounds are married and cannot afford to give up wage earning to pursue professional work. The Board, therefore, quite prop-

erly stresses the desirability of industrial teacher-training service through evening or part-time classes to employed craftsmen.[13]

12. Retail Selling.—About the time that the National Education Act went into effect, it was found that commercial education needed to be modified to meet the demands of business. A reorganized program of commercial education especially suited to the abilities of young people just leaving school and one based upon modern business demands was worked out under the caption of Junior Business Practice. Training for retail selling was also advocated and has been introduced in a number of cities. In order to be reimbursable under the act as it stands at present, retail selling and other forms of commercial education must be taught on a part-time basis. This is quite practical in the case of retail selling, for employed working persons in stores can get the experience in part-time continuation classes. Department stores and other progressive stores are learning that it pays to have salesgirls with special training. Even though job-interpretive instruction to junior store workers has demonstrated value, progress has been relatively slow. This may be due in part to traditional ideas among commercial teachers but it also no doubt reflects the absence of federal subsidy and supervision. Even though the Federal Board has had on its staff able representatives engaged in the commercial field, there has been a striking difference in the development brought about under the act, as nearly as that can be judged, in trade and industrial education on the one hand and commercial education on the other hand. It seems to show rather conclusively that federal aid and federal supervision with administrative powers have a very wholesome effect upon the development of vocational education. Under the terms of the Act of 1917, the service of the Federal Board in commercial education is limited to research and to rendering service requested by national trade associations, as for instance the National Association of Retail Grocers and the National Dry Goods Association, by state and local school authorities, and by state and local trade groups or associations.

[13] Eleventh Annual Report, 1927, p. 26. Also Seventh Annual Report, 1923, pp. 61-62, as well as Eighth Annual Report, 1924, pp. 51-53.

13. Promotional Supervision.—In order to assure itself that the provisions of the vocational education acts are being met, the agents of the Board visit typical schools and classes. Such visits are made with state representatives or at their invitation. The purpose of these visits is more than mere inspection—more than simply seeing that the law is complied with. There necessarily is a minimum amount of inspection to do but the Federal Board agents keep in mind the purposes of the National Act which include promoting desirable types of trade and industrial education. An agent's work, therefore, is primarily promotional supervision—serving as advisor, counsellor, and promoter in the best sense of the term. Not only through their official connections, but also because of the unusual opportunity open to agents of the Board, they are in a position to see first-hand how various trade and industrial education problems are met in various states. In each they get the points of view back of the different procedures and methods used and thus their advice and counsel is of special interest to state and local supervisors and directors.

Federal agents visit teacher-training classes in the same manner as classes in vocational education. To one thoroughly acquainted with the field it takes little time to "size up" the quality of the work that is done and to estimate the fitness of those taking training for the jobs for which they are preparing.

14. Auditing.—The auditing of expenditures under the acts for which the Federal Board is responsible is done in part at Washington, on the basis of the descriptive and statistical reports submitted annually by the states, and in part is performed in the field by the regular agents of the Board. This is desirable since the auditing of state vocational education accounts is a matter requiring an intimate knowledge of the federal acts and of the rulings and interpretations of the Federal Board for Vocational Education. The field auditing is done in the state offices with the cooperation of the state's fiscal, administrative and supervisory officers, who stand ready to explain the details of the expenditures made from federal funds.

15. National Associations.—The Federal Board for Vocational Education is especially well situated and organized to work with national associations. As a federal department charged by law with research and investigation the Board can readily make contacts with any national associations, no matter where they may be located, whereas state and local vocational education authorities are more circumscribed in such matters. Many valuable contacts with national associations have been made by the Board, and the state departments so situated that cooperation might be possible have been advised of such opportunities.

16. Civilian Vocational Rehabilitation.—Through what is popularly known as the Smith-Fess Act, passed in the spring of 1920, Congress provided an annual subsidy of one million dollars for promoting vocational rehabilitation among civilians disabled in industry or otherwise. This Act is administered through the rehabilitation division of the Federal Board, and while not strictly speaking a phase of industrial education is a worthy undertaking that directly affects men and women in industry. Much of the training given is in the form of "placement training" or training "on the job" and this, of course, is often on trade or industrial jobs.

During the years 1927 and 1928 the rehabilitation service of the Federal Board made surveys of the rehabilitation programs in 39 states.[14] This was done in the interest of studying methods of administration and of case work. There is great opportunity for service to persons in need of rehabilitation. The problems involved in a national program of this sort are many and varied. Some few states had established rehabilitation programs before the national rehabilitation act was passed. Here again is an outstanding example that proves what federal aid and federal cooperation will do. No such program as we now have would have been ours had the matter been left to the states alone.

17. Addresses.—Members of the Federal Board as well as of its technical staff have made it a point to appear from time to time, as the occasion warranted, to address labor organizations,

[14] Twelfth Annual Report, p. 19.

groups of manufacturers, service clubs, women's organizations and educational groups in behalf of the work that the Board undertakes. Many of these addresses have been given wide publicity and no doubt have helped to guide public opinion in matters of national concern with which many are not well informed.

Another type of promotional service rendered by members of the staff is in the form of contributions to professional publications such as the Vocational Education Magazine, Industrial Management, Mechanical Engineering, Trained Men, the American Vocational Association News Bulletin, and other publications.

18. Developing Goodwill.—By no means least in importance in the service rendered by the Federal Board is the goodwill that its staff assists in developing among the numerous individuals, groups, agencies and associations that in one way or another have an interest in vocational education.

Progress under the National Vocational Education Act depends quite as much upon gaining the confidence, goodwill and cooperation of those directly involved in the program as upon any other single feature. The larger the task, the larger the number of persons involved, the more essential is it to have cooperation and goodwill. This can best be fostered through personal contacts made by the staff. The evident professional attitude maintained by the latter has helped to bring together for constructive service in trade and industrial education many individuals and groups who otherwise have between them points of difference in viewpoint and belief.

Summary.—The Federal Board for Vocational Education is an independently organized department of the federal government, charged specifically with administering the National Vocational Education Act of 1917 and later supplemental acts dealing with vocational education and vocational rehabilitation. The many duties of the Board may be briefly summarized as follows: (1) Administrative responsibilities; (2) research and studies; and (3) promotion and development.

It should be understood that the eighteen types of service

rendered by the Federal Board, as just listed, do not constitute a complete list of its activities even in the trade and industrial field alone, but are given to illustrate the type of service rendered. For a record of the accomplishments in the vocational program, the reader is referred to the "Annual Reports to Congress" listed among the material given herewith for supplemental reading. The numerous well-drawn charts and graphs found in these reports give convincing testimony of what has already been accomplished in vocational education of less than college grade conducted under public auspices.

QUESTIONS AND PROBLEMS

1. Make a diagram showing the organization of the Federal Board for Vocational Education.

2. Indicate the present personnel of the Board and the technical staff in the diagram.

3. Explain what is meant by "functional" organization of a staff.

4. Discuss the relative advantages of absolute and relative standards and show their place in a national program of vocational education.

5. In what ways, if any, does teacher-training as contemplated in the National Vocational Education Act differ from traditional ideals and practices obtaining in teacher-training service for general education?

6. Distinguish between inspection and supervision.

7. Who is eligible for rehabilitation service carried out in cooperation with the Federal Board? Are the blind eligible? Must the applicants for service be citizens of the United States? Are teachers eligible?

8. Why was the Federal Board for Vocational Education established as an independent service?

9. Does the administration of the National Vocational Education Act show evidence of Federal domination? If so how?

FOR SUPPLEMENTAL READING

Macdonald, Austin F. *Federal Aid,* Chapter VII, "Vocational Education." The Thomas Y. Crowell Co., 1928.

Federal Board for Vocational Education, the following:

(a) *Annual Reports to Congress,* 1919 and annually thereafter.

(b) Bulletins:

1. *Statement of Policies,* Revised Edition, 1926.

17. *Trade and Industrial Education,* Revised Edition, March, 1929.

(c) Year Book, 1923.

Wright, J. C., and Allen, Chas. R. *Administration of Vocational Education,* Chapter XVII, "Meeting the Needs of a Community." John Wiley & Sons, Inc., 1926.

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CHAPTER XII

PART-TIME GENERAL CONTINUATION SCHOOLS AND CLASSES

Part-Time School Defined.—Under the provisions of the National Vocational Educational Act, the term "part-time" as it relates to trade and industrial education, refers to instruction that is given during working hours. In this respect it is to be distinguished from evening schools or classes which are interpreted to mean schools or classes conducted during non-working hours, or on time that is not "working time" for the particular persons under consideration. Part-time education, then, for most persons is education given for a part of the working day, but for those employed at night such education, if given, will be given during evening or night hours when such persons are at work. The distinction, therefore, between part-time and evening classes may not be that part-time education is always given in the daytime and that evening instruction is always given in the evening, but rather that part-time classes are conducted on "working time" and that evening classes are conducted on "leisure" time.

It is necessary to distinguish clearly between part-time education and evening education because the National Vocational Education Act has set up certain requirements and conditions for evening classes that differ somewhat from those for part-time classes. For instance, the entrance age is higher for evening than for part-time classes, and trade preparatory instruction, though permitted for part-time classes, is not subsidized under the National Act when given to evening classes. Furthermore, state as well as federal requirements may vary for the two types of education mentioned. In some states the certification requirements for part-time teachers differ from those for evening school teachers. Still another difference may arise in ways

of reimbursing from state and federal funds the salaries of the teachers in these two types of schools. All of these and other conditions make it necessary to classify these types of trade and industrial education carefully in line with federal and state interpretations.

Kinds of Part-Time Schools.—Part-time schools or classes are classified in several ways. For example they may be spoken of as: (1) "optional," (2) "permissive-mandatory," and (3) "compulsory" in accordance with the nature of the legislative acts under which they are organized. An "optional" part-time class is one organized without legal compulsion. Such classes were started by a few states before the National Vocational Education Act was passed, and they can, of course, be organized anywhere today where the desire exists and where there are the necessary personnel, equipment and the other things that are essential.

Some states started their part-time program by passing what is called "permissive-mandatory" legislation. In accordance with such legislation a city, town, or school district *may* establish part-time classes, but if it does establish them certain conditions and standards must be met. It is hardly necessary to say that neither the optional plan nor the permissive-mandatory plan of organizing part-time classes has resulted in large programs in the various states.

A compulsory part-time class is one that must be established when certain conditions exist, whether the local town, city or district desires to establish it or not. Thus, in Pennsylvania, such classes must be established in any school district where twenty or more minors between the ages of fourteen and sixteen are employed. Some states have a wider age limit as, for example, from fourteen to eighteen years of age. Some states require the schools to be established on the basis of the number living, as distinguished from being employed, in the district, and in still another case—that of Iowa—the schools must be established if the pupils either live or are employed in the district or city.

Most states now have compulsory part-time laws. The man-

datory feature of such plans has resulted in a remarkable development of part-time education in the United States in the last ten years.

Another Basis for Classification.—A more common classification of part-time schools and classes is the one which indicates, through the terms used, whether the training involved is primarily for: (a) the development of civic and vocation intelligence made possible through general education with emphasis on try-out and exploratory training; or (b) trade extension training given to vocationally advanced persons employed in occupations for which supplemental training can be given either by the schools alone or by them in cooperation with industry. The former type of part-time education is known under such varying terms as: "continuation education," "general continuation education," "part-time continuation education," "part-time general continuation education," and "part-time or continuation education." The latter form of part-time education —that given in a trade extension basis—is known as "part-time trade extension education," "part-time cooperative education" and "cooperative education."

Part-Time General Continuation Education.—Part-time education schools were established in certain European countries for some years before they were introduced into the United States.[1] They were first established in conjunction with Sunday schools and were conducted in order to instruct the people in reading and writing so that they could understand the Scriptures. Later, technical instruction was introduced, and the instruction was taken over by public school authorities. The term "continuation school" comes from the German "Fortbildungsschule," meaning a school for continuing one's education. It is probable that a too literal interpretation of the term has done a good deal of harm, for the part-time continuation school is not, as some have supposed, organized simply to continue to train those who come within the provisions of the part-time law—the "permit pupils"—in the same subjects and in

[1] Sadler, Michael E. *Continuation Schools in England and Elsewhere.* University of Manchester Press, 1907.

the same way as was the case in the full-time school. Many boys and girls leave the full-time school at the earliest opportunity permitted by law, not because they have to, but because they choose to do so—because traditional subject matter and methods of teaching are not able to overcome strong constructive tendencies that seek expression in productive work of various types—usually something that involves physical activity. To continue to teach such pupils in the traditional way is simply making a bad educational situation worse.

Proportion of Children at Work.—The figures of Table IX, taken from a study made by the Pennsylvania State Department of Labor, in cooperation with the State Department of Public Instruction in that state, show the great range in the proportion of fourteen- and fifteen-year-old children employed in cities of over 50,000 population in that commonwealth. It should be mentioned in passing that at the time this study was made the school law required full-time attendance to fourteen and part-time attendance for eight hours per week for employed pupils fourteen to sixteen years of age, and full-time attendance up to sixteen unless the sixth grade had been completed.

It will be noticed that the proportion of these fourteen- and fifteen-year-old children that are employed ranges all the way from 3.5 per cent to 50.2 per cent. The percentage is affected directly by the opportunities for employment. It is low in cities where the steel industries and metal trades are the chief source of employment for in many such occupations 16 and 18 years are the minimum legal ages at which boys may go to work; and the percentage is apt to be high where there are textile and silk mills that will employ children under sixteen. Miss Charlotte Carr who made the study just referred to points out that about one-fourth of these youths operate machinery—mostly textile machinery—though metal working, wood working, food products, printing, laundry, paper products and other machines were also used to some extent.

Figures like those just presented bring home to us the fact that juvenile employment is in many places a stern reality. Boys and girls leave school at an early age without adequate

TABLE IX. PROPORTION OF EMPLOYED CHILDREN IN PENNSYLVANIA CITIES OF 50,000 POPULATION AND OVER*

City	Proportion of 14- and 15-year-old children employed	Number of employed 14- and 15-year-old children enrolled in continuation school	Total number of 14- and 15-year-old children by school enumeration
Reading	50.2	1,549	3,087
Allentown	40.8	1,165	2,857
Wilkes-Barre	29.5	779	2,643
Lancaster	28.7	417	1,453
Bethlehem	19.4	461	2,382
Scranton	16.7	969	5,793
Philadelphia	16.5	9,731	59,105
Chester	10.7	133	1,238
Johnstown	9.2	233	2,527
Erie	5.7	203	3,550
Pittsburgh	5.2	1,331	25,394
Harrisburg	5.2	134	2,570
Altoona	3.5	77	2,199

* Fourteen and Fifteen Year Old Children in Industry. Special Bulletin 21, p. 7. State Department of Labor and Industry, Harrisburg, Pa.

preparation, either for the responsibilities of citizenship or vocational life. To argue that nearly all children between fourteen and sixteen years of age ought to be in the full-time school, and that if they leave school early they do it of their own free will and that consequently society is not responsible for further education at public expense is not going to get us anywhere. We are living in an age that recognizes more and more that society will be best served by giving all persons as much opportunity as possible to develop along lines determined to a large extent by personal interest, ambitions, capacities, and by what society needs. We are living in an age of "prolonged infancy"—an age when it takes longer than formerly to go

through the learner stage to the producer stage. Occupational life is being deferred a few years in order to make possible a better general background for citizenship and a better preparation for vocational competency in adult life. Shall we let adolescent boys and girls cut loose from the full-time school at fourteen years of age, or shall we exercise a certain wardship and guidance through compulsory part-time education until they are sixteen or eighteen years of age?

Juvenile Jobs.—The majority of fourteen- to sixteen-year-old boys and girls are employed at what are distinctly juvenile jobs—jobs performed by young persons—jobs requiring little previous special training—jobs having little direct relationship either to skilled occupations or to what those employed in them will do when they become older. It may be neither desirable nor possible for the public schools to give training through either full-time or part-time classes that would materially help young workers to become more proficient at these juvenile jobs. One difficulty with such jobs is that they attract youths largely by the entering wage that is paid, whereas other occupations having greater future prospects and involving worthwhile instruction and other desirable features do not pay the same relatively high wage at the start. They do not prepare for the next step vocationally except in a very indirect way.

Purposes.—The purposes for which the part-time general continuation school is conducted are many, depending upon a number of variable factors. In the main, however, the following are among the most important:

1. Bridging the Gap.—One of the chief responsibilities that the public schools face in connection with employed adolescents is to help them to make the transition from school life to occupational life—to bridge the gap, as best it may be done, between the life of a vocational novice and non-producer to that of a worker who must assume and meet the responsibilities of adult life. To construct, figuratively speaking, this bridge that leads to more effective participation in the world's work, to fuller individual development and greater opportunities for happiness is a task frought with many obstacles, not all of which

can be controlled by the school. In the last analysis the capacity to profit through instruction and the effort to attain further knowledge and skill must come from the individual himself.

In more than one sense we are all problems—both youths and adults, but the part-time continuation school gets through its far-flung gates more than the average allotment of boys and girls that need individual attention; that need to have their interests aroused for desirable achievement; that need to have sane attitudes toward life developed in them; that require assistance in building up useful habits of work and of constructive thinking. The degree to which these things can be brought about depends indeed to some extent upon the school, the teacher, and the curriculum, but most of all upon the individual himself. And since the "average" part-time continuation boy or girl is less capable and has less interest in learning than the students of like age who remain in school, it means that the teacher has a greater "problem" on his hands in the part-time school—but one that presents a challenge that is being met by men and women who have a personal interest and an abiding faith in wandering adolescent youth.

2. Guidance.—In this all important task of bridging the gap between the school and industry, the first outstanding need is *guidance.* In any case it must be a personal, individual affair. It may be educational guidance, social guidance, moral guidance, vocational guidance or combinations of any or all of these. The first step in the process is "case study." Each boy or girl must be regarded individually. We must have as a basis all of the usual school records but in addition there should be, on the part of the teacher and counselor, an acquaintanceship with home conditions, avocational interests and vocational leanings. In order to make this possible, part-time classes should be small. From fifteen to twenty-five pupils at the most should be taught in a class where individual instruction is demanded; from fifteen to twenty makes a good group for shop purposes. In addition to small classes the teachers should have time set aside in which they can visit the homes of the pupils, and the places where they are employed. It may be argued that it takes a

great deal of time to do this. That is true. If sufficient time cannot be arranged during school hours then out of school time should be used and the teacher should be compensated accordingly.

In the larger cities where guidance programs are well established the services of trained counselors are available to supplement the guidance work of the classroom and shop teachers; in the smaller communities the major responsibility falls to the lot of the teacher.

This job of guidance is one in which all socially minded persons have an interest. It is very easy to get an abundance of well intentioned advice—but advice that as regards *vocational* guidance is all too often sadly meager, inadequate, and unfortunate. Too often have boys been steered into "white collar jobs" where they would have been better off to start in the shop; too often have they been advised to get into employments that were already overcrowded or into jobs that can really be done as well or better by girls or women.

Practical vocational guidance should involve the following:

(a) Diagnosis.
(b) Opportunity to get the training needed.
(c) Placement on the job.
(d) Follow-up.

These items will be discussed more fully in a later chapter. We wish to make the point at this time, in connection with the discussion of part-time continuation education, that other forms of guidance, such as social and moral guidance, may be of special value in many cases.

3. Citizenship.—For many, the part-time continuation education that can be offered between the ages of fourteen to sixteen should stress training in the elements of good citizenship. That the continuation school is doing an effective piece of work along this line is an established fact. All one needs to do is to compare the conduct of children of a given age that are under the control of the schools—even though it is for only eight hours per week—with the behavior of those who are beyond the reach

of the schools. This relatively simple test was practically forced upon the Commonwealth of Pennsylvania in 1915 through the passage of the Cox Child Labor Act, which provided that all children, between fourteen and sixteen years of age employed in school districts where twenty or more work certificates were issued, were to attend part-time classes for eight hours per week. Some of these youths had been out of school for almost two years. They were, as many teachers are ready to testify, much harder to control and more difficult to teach than the boys and girls who had not cut loose from school.

4. Exploration and Try-out.—Many, probably most pupils, taking the country as a whole, attending continuation schools or classes, have not had the opportunities of adequate try-out and exploratory courses in the field of the practical arts. Before a vocational choice is made it surely is desirable that there should be first-hand acquaintance with typical kinds of work, such as is carried on by adult men and women. For that reason part-time continuation pupils should by all means, and wherever at all possible, enjoy the privileges of practical arts instruction if they have not previously had it. And, this training should be given to them by the most capable teachers in the employ of the district. It should be presented especially in such a way that it will give, in the short time available, an appreciative understanding of tools, methods, processes, and design as used in the various major branches of human activity, together with as much actual participation in typical work and with the maximum amount of visual instruction such as may be given through shop visits, trips to museums, lantern slides, movies, illustrated talks, etc.

The idea that any teacher meeting minimum requirements—any building and equipment meeting minimum standards—and any curriculum that happens to be in effect for full-time pupils will satisfactorily serve the purposes of part-time continuation classes is "all wrong."

5. Attitudes and Ideals.—There are a number of things that employment does for young workers that are generally recognized to be an asset. Employment tends to develop habits of

industry and economy and it helps to give an appreciative understanding of relative values. One who has never labored can hardly appreciate fully what physical toil means. There are other things, just as valuable, that industry does not do so well—that consequently need to be taught by other agencies such as the home and school. Important in the latter group is the development of attitudes, ideals, and life objectives or aims. These are matters of no small consequence; they are things that the school can distinctly help to build up; they are something that should be regarded among the direct objectives of part-time education. In many instances the part-time school can do nothing toward giving vocational training—nothing in the way of specific job training, but something can certainly be done toward developing sane attitudes toward work, a better, more cooperative attitude toward "management." And this improved attitude toward one's work and one's employer is worth more to the employer and to the success of the business than it costs. Now, to pursue this thought a bit further, the ultimate realization of a larger and more useful life rests upon such simple foundation stones as right attitudes and high ideals that are developed in youth and that are adhered to through days of trial as well as during more pleasant hours. The part-time continuation school teacher has an unusual opportunity to reach young men and women at a crucial time. The personal help that is given by these teachers is probably more far-reaching than they themselves suspect, for many a boy and girl does not really fully realize until the part-time school period is over and past that the teacher was helping to shape the whole attitude toward the job, toward the family and society as a whole.

By helping youth to come to a sane understanding of life through discussing vocational, social, and economic problems close to the experiences on the job and in the community, the teacher helps to stabilize their lives; helps to give purpose to life; helps to give direction to it; helps to instill passion for those things that we call best and most worth-while.

6. Occupational Training.—Since employment at skilled trades or occupations, even in the capacity of apprentice or

helper, is limited as a rule to persons sixteen, seventeen or eighteen years of age, it follows that there is little opportunity for direct trade and industrial education for the fourteen- to sixteen-year-old group of employed boys and girls. And contrary, perhaps, to popular opinion, quite a large proportion of the sixteen- to eighteen-year-old group, attending part-time continuation school in states where the law requires it, are employed at jobs for which trade extension training cannot be given by the schools. Part-time continuation education, therefore, resolves itself into a program centering around try-out, exploratory and guidance training together with motivated instruction in such "tool subjects" and citizenship training subjects as seem best to serve the groups involved. In this program practical arts education should find a leading place. It is unfortunate that in many instances industrial arts instruction for boys and home economics training for girls is not available for part-time pupils, because these forms of education particularly appeal to the permit pupils.

Individual Instruction.—There are at least two reasons why individual instruction needs to be emphasized in the compulsory part-time school:

(1) Because group instruction as given in the all-day school has lost its appeal in about two out of three cases among those attending the part-time school.

(2) Because the part-time school is so organized that individual instruction is imperative. This statement relates particularly to the fact that in the compulsory part-time school pupils come and go constantly—they come at the age specified by law and they leave when the sixteenth or eighteenth birthday, as the case may be, has been reached.

Individual instruction must, of course, be given along with a certain amount of group instruction for there will always be times when it will be best to teach by the group method. When individual instruction is given it can be organized along lines such as the following:

(1) All shop or laboratory work is organized almost wholly on the individual instruction plan with group instruction thrown

in where desirable. The academic instruction is grouped on the basis of grades previously attended in the all-day school.

(2) The shopwork is handled as in the preceding case whereas departmentalized instruction is given in the other non-vocational or general education subjects.

(3) The pupils are grouped according to their vocational aim or on the basis of their employment.

(4) The shopwork and the related subjects, namely mathematics, drawing, science and trade theory, are taught on the basis of their vocational choice, whereas the general education subjects are taught on the basis of groups formed according to previous school achievement.

As a means of assisting the instructor in giving individual instruction in the shop, it is desirable to use individual instruction sheets; especially operation sheets and job or project sheets. It is also desirable to have a good supply of reference material, such as copies of the Industrial Arts Magazine, the Industrial Education Magazine, and numerous reference books and pamphlets, well illustrated if possible with working drawings and photographic reproductions.

For classroom instruction some form of individual instruction such as the Dalton Plan or modifications of it appear to be promising. If assignments can be worked out on a unit or contract basis it will help very materially to overcome the handicap of constant change in the personnel of the class, due to irregular entrance and leaving school for full-time employment.

Motivating Instruction.—It is generally recognized that instruction, to be effective with part-time pupils, must have a strong appeal and a telling punch. Here is the opportunity to see what good teaching can do. To overcome the loss of interest in the all-day school, the attractions that come with earning power, and associations that are often not favorable to learning, the instructor must "put over" instruction that makes a personal appeal, that is dynamic, and that is energizing. How can that be done? First of all, by basing instruction on vocational objectives in so far as these can be anticipated. Fundamental truths and basic facts when clothed in terms of practical prob-

lems of the trade take on new life, arouse latent interests, and call forth renewed effort. Somehow or other a practical problem, be it either physical or mental, calls forth a different response than does the theoretical, unapplied exercise. Second, instruction can be motivated by tying it up with avocational interests, especially when the latter are in season. For instance, problems in the spring and summer may be based on baseball practice; in the fall, on football; in the winter, on sports that are in season. In a number of instances avocational interests are stronger in their appeal than vocational ones. In the third place, instruction can be motivated through appeal to fundamental, in-born instincts such as the instincts of curiosity, manipulation, constructiveness, and self-preservation. And in the fourth place, instruction can be motivated through association with past experiences in the home, in recreational pursuits, and in the past occupational life of the learner.

Fluctuation in Attendance.—The attendance upon part-time continuation schools and classes is affected directly by conditions of employment. When there is plenty of work attendance goes up because more permit pupils are taken on by industry; when work is scarce many permit pupils cannot get work and so they are forced, in some states at least, to return to the full-time schools until they can secure a job. This creates an administrative problem for the school district offering such training. The accompanying graph illustrates the variation of attendance at the part-time continuation school at Harrisburg, Pennsylvania.[2]

Requirements.—There are two specific requirements in addition to the general requirements mentioned in Chapter V that affect all forms of part-time instruction given in conformity with the Federal Vocational Education Act: (1) that the minimum entrance age shall be 14 years; and (2) that at least 144 hours of instruction are to be given per year.

The federal law provides that the subjects taught should "increase the civic and vocational intelligence of the pupil." This is a very broad provision, for there are few if any subjects taught

[2] Supplied through the courtesy of Mr. Harry K. Balsbaugh, Principal of the School.

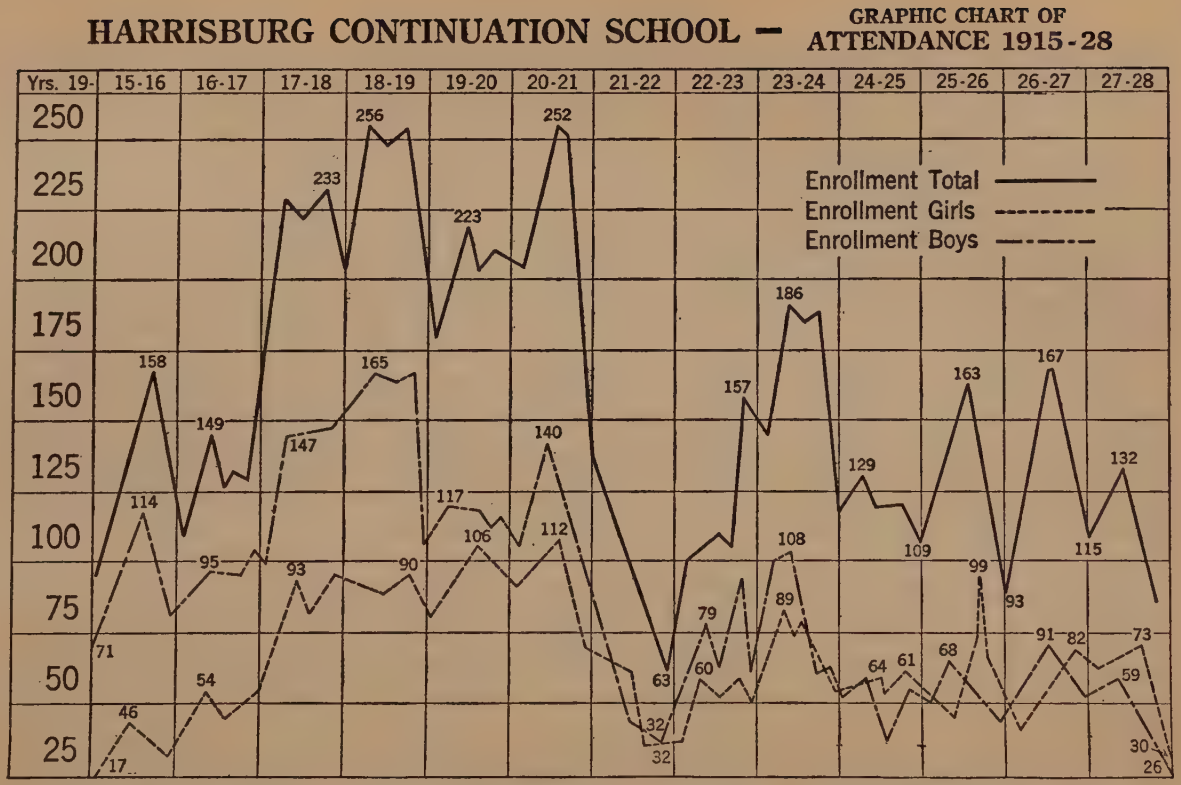

Diagram 2. Showing fluctuations of attendance in a compulsory part-time continuation school.

in public schools that cannot be interpreted as coming within this provision. Thus commercial education, such as courses in retail selling, can be offered and have been reimbursed as continuation part-time education. There has been discussion for and against such use of funds allocated to the promotion of industrial education. Some feel that the funds provided for industrial education should not be used for general education such as citizenship training. Others take the stand that we cannot afford to shirk in any way the important task of helping young wage earners get a fair start in life and that if they need general education, especially citizenship training and exploratory and guidance instruction, that should certainly be forthcoming at public expense in order to safeguard the future welfare of the state and nation.

Administrative Units.—In Pennsylvania a part-time continuation school must be opened when twenty or more minors between the ages of fourteen and sixteen are employed in the school district. In certain other states such as Massachusetts and New York, such schools are not required unless there is a much larger attendance. This makes the problem quite different in these states. The most difficulty in providing proper housing, equipment, properly qualified and paid instructors, a good curriculum and all that goes to make up satisfactory educational conditions, is nearly always met in the small, poor school districts. Some of these districts particularly resent having to conduct a school for boys and girls from adjoining towns or from the country who happen to be employed in the town. The stand is taken, on the other hand, that since they work in the district and thus contribute to its wealth and tax income, it is but fair that such districts provide the little instruction specified by law for employed boys and girls.

Practical Arts Instruction.—Considering the primary purposes of part-time general continuation education to be adjustment to occupational life and the exploration of individual interests, aptitudes, and capacities, is it not reasonable to contend that practical arts instruction—industrial arts for boys and general home economics for girls—should be included in the cur-

riculum? Few will doubt the wisdom of that. In the larger units of administration it can be provided but in the small ones it seems to be difficult to offer these forms of general education. If the school law requires eight hours of part-time education per week and if those must be given during a single day, then let us make certain that those eight hours are not all spent at sitting at a school desk trying to study books. From the standpoint of the learner it would be infinitely better if those eight hours were made to include practical arts, auditorium work, music and physical training or else at least given on two separate days.

Blazing the Trail.—It has been pointed out by many persons intimately identified with part-time continuation schools and classes: (1) that we must appreciate that compulsory part-time instruction must not be restricted to conventional all-day school methods, standards and procedures; (2) that the pupils are to be regarded as *employed* boys and girls rather than school children; (3) that the school is a "last chance" school rather than a school for completing the training of the all-day school; (4) that it is a vocational school in the sense that it exists primarily to help employed youth; (5) that the aim should be to take pupils as they are and where they are and build upon that as a foundation; and (6) that the school exists primarily to serve as an exploratory try-out and guidance service to employed boys and girls.

Ten or fifteen years ago we had, in America, little experience with compulsory part-time schools. Since that time much has been learned about how such training may best be organized and conducted. It has been a matter of "blazing the trail" and we are by no means through with that process. The compulsory continuation school presents many challenging problems—they are being met by teachers with initiative, with a vision, and with a sincere desire to help those who need help most. When the history of education of our present generation is written, there will be, we trust, more than a passing word of tribute to the cause of part-time education, to the social service that it has rendered, to the economic good that it has created, and to the

conservation for more complete living that has been brought about, often against great odds, by those who blazed the trail of educational service to employed youth.

Some Objections.—Part-time compulsory education should be regarded as a conservation measure. It helps to conserve and make available for use the investment that society has already expended upon those who are about to seek employment; it helps to conserve in perceptible ways the mental and physical endowments of youth. But in spite of it all there are objections to be heard here and there to compulsory part-time education. These may come from the boy himself. He may not be paid while attending the part-time school. Especially is this true if he works at "piecework" or by the hour. In his eagerness to get along in the world, to make money, he fails to appreciate that education is an investment that pays good dividends, and he therefore grumbles because his immediate objective—money—is being interfered with. Then there is the uninformed, or misinformed employer who sees no reason why he should be forced to send his young employees to the part-time school for four or eight hours per week. Is not that an unjustified interference with his business, he argues. He further cites the fact that in some neighboring state no such compulsory law exists and that this creates a handicap to his business. Now, is that actually the case? Or, is it probable that he can reasonably expect better behavior, better attitudes, and better cooperation and understanding of his permit employees as a result of their going to the part-time school? In addition to these there is the occasional disgruntled taxpayer who is ever ready to vote against anything that will raise his tax bill. He very evidently fails to understand that in the last analysis it is best for him as well as everyone else that *all* children be given a reasonable amount of training that will make possible better citizenship and improved vocational competence.

Is It Due Them?—Are we to regard part-time continuation education as a benevolent service that we offer employed youth out of the generosity of our hearts, or is it something that they, as employed workers and as contributing members of our Ameri-

can society have an inherent right to expect? R. L. Cooley reminds us that: "The youngsters from fourteen to eighteen years who are in employment, in any one of these cities, are usually earning and paying into the budgets of the families from which they come an amount of money approximately as great as the entire public cost of high and grammar school education in their respective communities."[3]

The preceding statement was made with special reference to: "practically every community, and certainly all of the larger cities." The fact that permit boys and girls are workers, and that they are helping to pay, through their labor, the taxes of the community should not be overlooked. Too long have we, perhaps because of precedent and tradition, looked upon full-time school attendance as something with which the public should concern itself and part-time education as something that has little or no claim upon public support. But both the contributions that can be brought about through part-time education, and the physical, social and moral hazards from which young employed persons need to be protected through guidance and training, call for a more universal program of public part-time continuation education.

Summary.—This chapter seeks to bring out the legal distinction between part-time education and evening school education. The former is given during working time whereas the latter is offered during non-working or leisure time. Part-time general continuation education, while it may embrace any subject that will "increase the civic and vocational intelligence of the pupil" deals, in the main with instruction that: (1) aims to conserve the educational investment already made in the youngsters; (2) aims to extend guidance in the important step from school to occupational life; (3) aims to assist them, through try-out and exploratory training, to discover their latent vocational interests and aptitudes; (4) seeks to give them a sane outlook upon the opportunities and the responsibilities of citizenship; (5) tries to help them to develop good physical and

[3] Lee, Edwin A. *Objectives and Problems of Vocational Education*, p. 162. McGraw-Hill Book Co.

mental habits; (6) seeks to further, in these days when working hours are getting shorter, training in the right use of leisure; and (7) aims to give such vocational training as circumstances warrant.

The proportion of boys and girls employed between the ages of fourteen and sixteen varies in Pennsylvania from approximately four to fifty per cent; the percentage being influenced materially by the nature of the employing industries of the community. Most of the employment is at juvenile jobs. Many of such jobs entail hazards that should be understood and that must be met by the workers.

The part-time general continuation school bases its claims for support upon the broadly humanitarian, social, moral and economic contributions that come as the direct product of the program. As the work becomes better understood we may expect to have even wider support than is now given to this worthy cause; as the teaching profession itself learns to know more about the compulsory education schools and classes it, too, will rise to the cause by giving better cooperation and help to those who are pioneering in this large task of helping employed youth to bridge the gap between the schools and industry.

QUESTIONS AND PROBLEMS

1. Show three or four main reasons why children leave school at the minimum age permitted by law.

2. Approximately what proportion leave because of economic necessity?

3. Make a study of the earning capacity of a group of part-time continuation boys and girls.

4. What states have a compulsory part-time law, requiring attendance up to eighteen years of age?

5. Give the legal requirements governing part-time school attendance in your state.

6. Which of the following plans of part-time school attendance do you prefer, and why?

(a) Four two-hour periods per week per pupil.

(b) Two four-hour periods per week per pupil.

(c) One eight-hour day per week per pupil.

7. What should be done about sub-normals who come within the provisions of the part-time law?

8. How can one best handle the boy who comes to school with a "chip on his shoulder"?

9. What suggestions have you concerning shop projects for permit boys?

10. What has been your experience with job sheets with such classes?

11. What training must a teacher have to be legally certified to teach shopwork on a non-vocational basis to permit boys? On a vocational basis?

12. On what basis would you try to show an employer that it is a good business investment for him to send permit pupils to the part-time school?

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CHAPTER XIII

PART-TIME TRADE EXTENSION TRAINING

Basic Requirements.—The basic requirements of the National Vocational Education Act of 1917 governing such matters as entrance age, the minimum number of hours of instruction per year, and the types of instruction permitted are the same for part-time trade extension as for part-time general continuation education. As far as the act is concerned, either or both types of part-time training may be given. However, because of fundamental differences in aim between part-time general continuation and part-time trade extension training it is held to be desirable to treat these two types separately.

The general distinction between trade preparatory and trade extension training has already been brought out under "Kinds of Vocational Education." It will suffice, therefore, to point out here that in terms of time involved part-time trade extension training may be divided into two classes or types: (1) Training ordinarily given for a few hours per week, as for example, four or eight hours; and (2) training conducted on the basis of an approximately fifty-fifty distribution of time between the school and industry. While it is to be remembered that both classes or types are "trade extension" in the true sense of the word, since they are intended expressly to give training that is supplemental to the daily employment, yet, as will be explained in greater detail later, it is rather common, in some of the industrial states at least, to refer to the latter fifty-fifty type as "part-time cooperative" education thus distinguishing it from the type conducted for four or eight hours per week.

Unless indicated otherwise we shall have in mind under the term "part-time trade extension" schools or classes conducted on the basis of four or eight or some other relatively small num-

ber of hours per week, reserving the term "cooperative" for the type of schools or classes having an approximately fifty-fifty distribution of time between the schools and industry.

An Example.—It may be helpful to cite a concrete case as a means of helping to convey more definitely what is involved in part-time trade extension training. We shall take for purposes of illustration a certain city where there is an evident need for trade training among the employed plumbers in such things as how to do lead-work, how to make certain types of installations to best advantage, and perhaps how to weld pipe rather than to couple it in the traditional way. There are, in such a city, many other things that plumbers' apprentices, not to mention journeymen and masters, desire to learn but the items mentioned will illustrate what is wanted. It is difficult to get this knowledge or skill that is desired on the job under modern production conditions. What can be done about it? One line of approach, and we believe a very desirable one, is to organize, under the auspices of the local board of education, through a county board where that system is in effect, or through a state trade school if such there be, a special course open only to persons already engaged in the plumbing and heating trades. Such a course will be given by someone of outstanding experience and skill who will command the respect and confidence of those he is to instruct. He will be legally certified or licensed to teach plumbing practice, related subjects, or both, as the case may be, by either state or local authority depending upon the system in effect, and he will be paid from public vocational education funds.

Now there may be a choice as to whether or not the instruction is to be given during working hours or not, but if the case is to illustrate "part-time" training it must be given during working hours. There will be no charge to the men taking the training unless it might be for a nominal enrollment fee, or for special materials used, although the latter are usually supplied, and in some states must be supplied, free of charge by the public schools. Anything can be taught that "supplements" the daily employment—anything that is of value in furthering

the trade proficiency of the men composing the class. The group may meet for four, eight, or some other desired number of hours per week, provided it is not less than 144 hours per year, and the instruction can be given at any place where there are the necessary accommodations and suitable equipment. The entrance age might be set as low as fourteen, but in reality will be higher as the minimum age for apprenticeship set by the plumbing and heating industries themselves is above the minimum mentioned in the National Vocational Education Act. The persons enrolled in the class may be paid by their employers while attending.

Factors Conditioning Success.—The success or relative failure of a program of part-time trade training is conditional upon a number of variable factors, all of which must be kept in mind by those in one way or another responsible for the enterprize. We briefly mention some of these:

1. Sponsors.—If the group to be trained is composed of persons employed in a unionized industry, as for example from building trades such as electricians, plasterers, plumbers, carpenters and brick masons, it is essential that the part-time training program shall have the approval of both Labor and the employing groups. And that means more than tacit approval —it means whole-hearted, active cooperation even to the extent of dismissing from the union and from employment any person who will not live up to the reasonable regulations and requirements set forth in the training plan. For either group to agree to back the proposition and then not to support the school authorities in, let us say, a disciplinary case, insignificant as that may seem or infrequently as it is likely to come up, may wreck the entire training program because it is just as necessary and perhaps more so to inforce sane standards of effort and discipline in a training program as under conditions of employment.

2. A Square Deal.—We have ample reason to believe that Labor firmly believes in thorough trade training. Through many past ages the guilds and labor unions have held out for and have enforced high standards of craftsmanship. It has

been the general experience of public school administrators that when Labor decides to support a training enterprise it is done thoroughly and consistently. Of course Labor cannot be expected to back training plans that have as their objective creating an over-supply of workers, or that are intended to furnish skilled or semi-skilled workers to be used to break a strike; and neither should the public school authorities lend their assistance and support to such endeavors.

A fundamental principle to be adhered to is that controversial matters such as hours and conditions of employment, wages and other matters pertaining to working conditions must be strictly excluded from class discussions. It is up to the school authorities to see to it that the game is played squarely; that whatever instruction is given shall be absolutely unbiased and of such a character that all parties to the training plan can heartily endorse what is taught.

3. Advisory Committees.—There is no better way that is known to us for getting cooperation and support for a publicly controlled trade training program than to appoint advisory committees to function in connection with the various trades or callings for which training is undertaken. In spite of occasional unfortunate situations that have arisen here and there, from time to time, with respect to advisory committees we firmly believe in the principle that there should be advisory committees from industry to work with the school authorities and particularly when real cooperation is necessary, as is the case in part-time trade extension training. Such committees should represent the employee, the employer and the schools. A committee of five—two employees, two employers, or in lieu of the latter one employer and one dealer in materials and supplies of the trade, together with one school man such as the director of vocational education or the principal of the trade school, should make a representative group not too large for effective work. Meetings can be held subject to the call of the representative of the schools and for their task the committee can work upon such problems as the selection of trade teachers, the equipment to be purchased, housing facilities, recruiting students,

supervising them "on the job," developing suitable instructional material or at least passing upon such material, securing instructional supplies, materials or equipment from industry, and such other service as may be required.

4. Practical Instruction.—It might appear almost trite to say that the instruction must be practical. Somehow or other we take that for granted. But the facts are that our instruction is not always as practical as we think it is. The instructor who is behind the time or who is too theoretical is probably entirely unaware of the matter. We sometimes teach practices in trade schools and classes that are quite obsolete in the trade. In other instances we are slow to introduce the latest ways of doing things. In other cases we spend more time on certain techniques than the situation warrants—as for example, spending too much time with the technique of lettering for persons who seldom have to do so much as make a rough working sketch. In still other cases the instruction is too general or has little immediate value to the person being trained. That these statements do not represent wild flights of the imagination may be seen from the fact that part-time trade extension programs are sometimes not easy to organize and they may be hard to maintain and develop. And, when we press those who make up the classes or who were in the classes for an answer we get the startling reply—"the teacher doesn't know his stuff" or "we can't use that information" or words to that effect. There are other factors to be sure that influence attendance but good, practical instruction is certainly of prime importance.

Training During Working Hours.—One of the problems that every community must decide is whether training that is to be given to employed persons—girls and women, boys and men—is to be made available on a part-time basis during working hours or upon an evening basis upon the worker's own time. To be sure both plans may be used. Tradition, former and present practice may all have a good deal to do with which of these plans is given preference in any given locality. We know that some cities run strongly toward one plan and that other communities favor the other. Now let us see if we can analyze

the chief elements involved in the problem. It is claimed, on the one hand, by some who have had extended first-hand experience with part-time trade extension training, that it pays in terms of dollars and cents as well as in other ways to make such training available during working hours and upon the employer's time. This is a point of view that is expressed by employers themselves. They feel that to give, let us say, four hours per week over to high-grade trade training will more than repay for the expenditure of the wages involved, by improved morale and through increased efficiency on the job. It is evident that whether or not that is true depends upon the nature of the employment and the instruction that is given. But as far as our limited observation may be taken as an index, we would say that part-time trade training on the employer's time is something with which the employer of skilled workers can well afford to experiment in order to determine for himself the value to his particular plant, establishment, or enterprise. It is not difficult to cite cases where the employers have no hesitation about saying that it is a paying proposition.

Organized Labor, we believe, is to a growing extent taking the stand that the apprentice should not be called upon to advance himself through systematically conducted class instruction held after working hours. It is claimed that when training is given during regular hours of employment the learner not only has a better attitude toward his job, but he can learn faster because he is fresher and more capable of concentration than he would be at the close of a working day and after he has eaten the evening meal. Much the same point of view has been taken rather generally with reference to training foremen—namely that it is of distinct advantage to give such training during regular working hours and on the employer's time. We well know that there is difference of opinion about the desirability of the employer paying for all of the time that is devoted to training. Some believe that it is unwise to make available to people advantages, such as trade training, without involving a corresponding effort on the part of the learners. They feel that it would be better and more fair to give to a learner four

hours of instruction per week on the employer's time provided that the learners also attend a like period of hours on their own time. This could be accomplished through evening school attendance. It will be noted that this argument has features that deserve study. In the first place, an employer who takes such a stand undoubtedly is willing to pay more toward the training program than the one who wants all trade extension training given during non-working hours. On the other hand, can it be assumed that the employer pays the whole cost of the training when given entirely upon his time, or is the cost referred to primarily the wages involved; whereas all taxpayers, including the trainees, share in paying for the instruction given under public control? If the latter is the case, is the differential—the amount that the employer pays more than other citizens—worth what it costs him?

Immediate Results.—Both the employer and the employee are looking for rather immediate results. Neither is greatly interested in general training that may have deferred values. Consequently it is customary to organize trade extension training on what is known as the "short-unit" plan in accordance with which a single specific unit, such as how to run a certain machine, as for example an engine lathe, or how to make a certain object, as for instance a special type of pattern for a machine part, is covered in a relatively short time, as for example in five, ten or fifteen sessions.

The chief advantages in the short-unit arrangement lie in the fact that it: (1) permits concentration of effort; (2) reduces the learning period—not necessarily in terms of actual hours of instruction required but in terms of hours elapsing between the period of initial employment and maximum productivity; (3) results in increased economy to the employer by reducing wear and tear on equipment, a saving of material and makes possible maximum production with tools and machines that frequently represent a large investment.

Succession of Units.—It is desirable, many times, to arrange a part-time trade extension curriculum so that it is made

up of a series of short units extending for a year or two. In this way one may take advantage of all of the desirable features of short-unit instruction and at the same time secure a thorough grounding in the theory and practice of the trade not readily secured on the job. This plan is especially to be commended for apprentices. For them a continuous program of considerable length should be laid out. In that connection the plan followed in the state of Wisconsin is suggestive. Under the state plan for apprenticeship the employer is required to indicate the number of hours of instruction to be given and he must submit an outline of the curriculum to be covered. The curriculums are frequently arranged in terms of a certain number of hours of training to be given on certain machines or on given types of work.

PART-TIME COOPERATIVE EDUCATION

Cooperative Education Defined.—As a starting point mention was made of the fact that the term "cooperative education" stands for a form or type of part-time training where approximately one-half of the time is spent in school and the other half in industry. But the term is sometimes used somewhat differently, and there are other things that enter into cooperative education in addition to the time distribution. The latter is, as a matter of fact, not the most essential thing. The keynote to a successful program of that sort is *cooperation for purposes of training.*

Historically, the idea of having persons learn while they work is by no means new. For example, the manual labor movement preceding the development of manual training in America had this general idea. What we today understand by "cooperative education" was put into effect by Dean Herman Schneider of the School of Engineering of the University of Cincinnati in the fall of 1906. The following principles are incorporated in Dean Schneider's plan:[1]

[1] Schneider, Herman. "Education for Industrial Workers," pp. 55-56. World Book Co., 1915.

1. An agreement between manufacturers and a school system.
2. The manufacturers agree to give comprehensive trade training to the apprentices.
3. The school agrees to give both general and specialized instruction to the apprentices.
4. The school passes upon and approves the shopwork given to students.
5. The school instruction is developed by the school.
6. The amount of school instruction is in most cases equal to the amount of shopwork.
7. The apprentices are divided into two sections which alternate with each other; for example, by weeks.
8. The apprentices are paid for their labors in the shop in accordance with the prevailing apprenticeship scale in the trade at which they are employed.

The cooperative plan at the University of Cincinnati is for college students. It was not long, however, before the plan was put into effect in the secondary schools. It seems that the honor of establishing the first cooperative industrial course of less than college grade goes to the Commonwealth of Massachusetts, and in particular to Fitchburg, where Daniel Simonds, president of the Simonds Manufacturing Company, was largely responsible for introducing the plan, of a pattern similar to Dean Schneider's idea, on August 1, 1908.[2] The city of York, Pennsylvania, followed suit about three years later; the program at York dating back to 1911.

In the state of Connecticut the term "cooperative education" is in use in connection with a plan whereby the learner's time is divided between the public schools on the one hand and the state trade school on the other.

These few examples can be multiplied and they would show that the "cooperative" plan varies somewhat in details in dif-

[2] Hunter, W. B. "The Fitchburg Plan of Cooperative Industrial Education." A circular issue by the Industrial Department of the Fitchburg High School.

ferent sections of the country. Under the circumstances it is a bit hard to define "cooperative education" in a few words so that the definition will have general approval. Keeping in mind the points mentioned in Dean Schneider's plan, we venture to suggest the following: *By part-time cooperative education is meant a form of part-time trade extension training based upon a working agreement involving cooperative relations between the schools and industry for purposes of training in accordance with which the learners spend approximately half time at school and half time in employment.*

An Example.—A city of approximately 10,000 population, rather industrial in character with a number of small and two large industries, one a manufacturer of steel products, was considering establishing some form of industrial education. There were no school shops of any kind. A survey of the community was made and as a result it was felt that both industrial arts education and vocational industrial education were needed, but both could not be started at once. In this case, the city chose to introduce trade instruction first. It was decided to recruit from the high school two groups of boys who were to spend the last two years of their high school course on a cooperative basis. Realizing that much depends upon initial success it was considered best to select these groups so that they would all be engaged in one line of work—machine shop practice. This in itself greatly simplified the problem of teaching the related subjects for it is much easier to give related mathematics, related drawing, and related science to such a group than to one composed of boys working at all sorts of trades. It was held to be desirable to secure the trade instructors from the local steel industry where all of the boys were to get their training, but no one that was competent to undertake the training work could be spared from his job. So two instructors were brought in, both machinists by trade. Each took half of the boys. The instructors supervised and instructed the boys "on the job" for one week and then taught the related work to the same group during the second, alternate week. The instructors worked together in developing suitable instructional material in the related sub-

jects. The non-vocational subjects included in the curriculum were not taught by the shop teachers. This arrangement was conducive to close coordination of instruction between the shop and the school. The one weakness that developed in this particular case arose from the fact that the instructors did not enjoy, at first at least, the backing and cooperation of the foremen in the plant. Whether that condition would not have developed had the instructors been selected from the local plant is a matter for conjecture, but certain it is that the industry had the opportunity to suggest men from within the organization. Later, the plan was modified so that the learners are in direct charge of the foremen and the school has a coordinator to bring about the proper relationships between the practical work in the shops and the instruction given in school.

After this plan was in operation a year or two industrial arts education was introduced so that boys can now have prevocational training before deciding upon what vocational line they wish to pursue.

Some Observations.—The preceding example illustrates the point that part-time cooperative education can be conducted by relatively small communities. It furthermore is a practical example of a school district that established a trade training program even though there were no school shops available. It is to be noted that under such a plan of procedure as the one outlined, several economies are effected. There was no initial outlay for additional housing nor for expensive shop equipment. Neither was the school district under expense for the materials of instruction used in the shopwork. In addition to these direct savings the school district received special reimbursement from state and federal vocational education funds, which added to the state aid given to all public schools, including the vocational schools, made the proposition such that it was within the reach of a school district that could not have afforded even the most limited all-day trade school program.

The case cited is by no means exceptional. A number of part-time cooperative programs have had their origin under very similar conditions. In the case of the smaller districts partic-

ularly, the program is frequently launched with little or no school shops available for either pre-employment or supplemental shop training.

Another Type.—It is only the community with one or more large industries that can conduct a part-time cooperative program in which all of the "co-ops" are trained for a single trade or even for a group of closely related trades such as various metal trades. It is frequently necessary, and in other cases where it is not necessary it is for various reasons desirable, to operate a program in which the group to be trained represents a great variety of industrial trades or occupations. The entire group in training may not be large—perhaps twenty or forty —but among their number may be persons learning plumbing, house painting, electrical work, automobile repair work, mechanical drafting, carpentry, patternmaking, mill work, machine shop practice and the like. The part-time cooperative plan is especially well suited to serve such a community, for unit trade classes would be out of the question except for a very few trades at the best. However, it is no small problem to give to such a mixed cooperative group the kinds of related subjects that bear directly upon their job in industry. More individual instruction is necessary in such a case than where the group is homogeneous from the standpoint of the vocations followed.

Pre-employment Training.—It is a recognized asset to a young man entering upon employment at a skilled trade or calling if he has had preliminary training in the basic principles or in introductory aspects of that trade. To be familiar with the simpler fundamental processes, to have a certain amount of skill with the tools of the trade, and to know something of the science and theory underlying the practice of the trade are all distinct assets. It is therefore desirable to make available through the schools such pre-employment training. Industrial arts instruction has some value along that line but it is desirable that more intensive instruction should be given. This may take the form of a year or two of training in the all-day school before the cooperative work is begun. Or, where that is not possible

it may be feasible to offer instead of pre-employment shop training a certain amount of supplemental shop training—especially at desirable processes not taught in the particular plant where the learner is employed. Such supplemental training would be given on school time.

Need for School Shops.—From the standpoint, then, of offering pre-employment training as well as for purposes of giving supplemental shop training to the "co-ops" it is very helpful to have school shops. There is still another reason for having them. As can readily be seen, there may occur, from time to time in industry, market depressions that may necessitate reducing the size of the working force. As a rule employers hiring cooperative boys will give them every opportunity to work so that their training will not be interrupted. But, if employment conditions should become bad it may be considered best, other factors being equal, to retain those who have dependents and to furlough the apprentices. It is in precisely such situations that it is very desirable to have school shops and drafting rooms in which much worthwhile training can be given to the "co-ops" in such an emergency. School shops, then, though not absolutely necessary to a program of part-time cooperative education are nevertheless highly desirable.

Length of Curriculum.—The part-time cooperative curriculum can readily be made to fit into various local situations. Some possibilities are indicated herewith:

1. Industrial arts on a required basis in grades seven and eight followed by either:
   (a) industrial arts on an elective basis, or
   (b) one year of all-day trade training; this to be followed by two years of cooperative training.
2. Industrial arts as indicated in (1), followed by three years of cooperative education, in the tenth, eleventh and twelfth school years.
3. Industrial arts as indicated in (1), followed by all-day trade training in the tenth and eleventh years followed by only one year on a cooperative basis.

It will be seen that the actual cooperative part of the curriculum may be one, two, or three years in length. The larger, more wealthy school districts can offer a variety of all-day courses, thus making considerable pre-employment training possible; the less privileged communities may find it necessary to dispense entirely with all-day trade instruction.

The actual time distribution between shopwork, related subjects and non-vocational subjects can be worked out to suit the requirements of any particular case, but it will probably have to be uniform for a given school. Although it may prove administratively convenient, both to the employer and to the schools, to observe what is commonly called a fifty-fifty distribution, it often does not amount to that in actual practice. Let us say that during the time that school is in session the learners alternate on a bi-weekly basis between the school and industry. This will be for perhaps 36 or 40 weeks. During that time there will be 18 or 20 weeks of school attendance of 30 hours each and the same number of weeks of employment of perhaps 44 hours each. In addition to this there may be about two months of full-time employment so that at the close of a calendar year a learner may have spent 600 hours at school work and from 1200 to 1400 hours at employment—certainly not a fifty-fifty distribution in terms of hours spent. Theoretically it would seem to be desirable to have varying proportions of time between the schools and employment, depending upon the nature of the trade or calling being learned, but it is difficult to see how such a variable program can be administered economically on the school side.

The Contract.—There are differences of opinion with reference to the practicability of written contracts or indentures between the three interested parties in any cooperative plan—the employer, the schools and the learner. There are places where such written agreements have been in use over a period of years, and where the written contract is looked upon as an essential document. There are other places where responsible industries have likewise worked with the schools for years, doing their share in the joint plan of training, but where they will

not sign any written agreement obligating themselves to do training. The point of view in the latter case seems to be that the reputation of the employing concern is a sufficient guarantee that they will carry out any oral understanding that they may enter into concerning training in cooperation with the public schools. It has also been said that it is just as well not to have a written contract because the boy is practically free to break the contract—in the sense that little can be done about it if he does—whereas the employer is financially responsible and can be held to the agreement.

Where written apprenticeship agreements are used they frequently specify in detail such items as the following:

1. Name of trade to be taught.
2. Length of training period in hours.
3. Compensation per hours for different periods of the apprenticeship, or compensation in terms of a per cent of the prevailing journeyman rate.
4. Conditions of employment.

Since it is often difficult to predict with any degree of certainty what the wage rates in any given trade or calling will be in the future, it would seem to be good practice to express the apprentice rate in terms of a ratio to the then prevailing journeyman rates. It is believed, furthermore, that it is usually advisable to have the rates vary in accordance with the kind of trade or calling involved. If journeymen plumbers, bricklayers and molders are paid more than carpenters and house painters, then there should be a corresponding difference in the apprenticeship rates.

A different plan is described herewith: Assuming that the total number of working hours involved in a cooperative course equals 5400, the rate of pay may be based upon a plan like the following, in effect at York, Pennsylvania, where there is an increase at every 900 hours of service rendered:

For the first 900 hours .....per hour
For the second 900 hours .....per hour

For the third 900 hours .....per hour
For the fourth 900 hours .....per hour
For the fifth 900 hours .....per hour
For the sixth 900 hours .....per hour

In this case the contract calls for a basic rate for each of the six periods. The employer may pay more, but not less than the standard rate agreed upon.

Some Details.—Assuming that it is the desire of a community to start a part-time cooperative program at the opening of the school term in September, it is well to put the proposition before the prospective boys in June before the preceding school year comes to a close. The plan should be explained and the boys are asked to indicate whether or not they desire to take up the course. Those who want to enroll may be given a try-out period of eight weeks or so during the summer months. During this probationary period in industry, the employer will study the boy from the standpoint of the latter's probable fitness for the trade, and the boy will get some good, first-hand experience that will help him to determine whether or not he ought to undertake the trade in question.

In order that the boys may be placed as advantageously as possible it is necessary to have a "coordinator" who knows the boys and who is also familiar with employment conditions in the community. The average school administrator primarily engaged in general education is not qualified to render that service.

The boys ordinarily work in pairs, and alternate so that there is always one person on the job out in industry. To illustrate, boy "A" works for two weeks and then goes to school for two weeks. While "A" is in school his "alternate" or "partner" or "team-mate" "B" takes his place, and so on through the school year. In order that there may be no confusion or other difficulty due to the boys changing work, boy "B" comes to boy "A" on Saturday and gets from him full particulars as to what is to be done the following Monday. This saves the foreman from having to repeat his instructions.

During the summer months when school is not in session, it enables all of the cooperative boys to work at their trades. Under normal conditions this presents no special problem since in many lines of work the rush-season is during the summer months. When work is scarce it may become a real problem to find work having distinct training value for everyone.

The Coordinator.—The man who is directly responsible for making the contacts, between the schools and industry, that result in a cooperative program, is called the coordinator. He may be the director of vocational education, the principal of the vocational school, or he may have coordination as his sole job, being administratively responsible to the director or the principal. He is the man who makes it a point to get acquainted with men in industry—learns to know their requirements and familiarizes himself with the working conditions in the various places of employment. The schools depend upon him largely to determine what particular boys shall be recommended for any job that may arise. His judgment must be good on such matters. Once placed the boys must be followed up. The coordinator goes to the foreman, talks with him about each boy and mutually he and the foreman, or the supervisor of apprentices if there is one, or whoever has direct charge of the boy, make up their plans as to what type of work the boy is to perform. Some sort of a plan will need to be devised that is fair both to the employer and the employed boy. If supplemental training of any kind is desirable for the trainees, it is up to the coordinator to find out what it is and to see that it is given. Such training may be mathematics, science, drawing, or even certain types of practical work.

Tact and common sense are two things that a coordinator must possess if he hopes to get very far. He must constantly remember that his is a *service job*; that from the viewpoint of industry education is offered as a means of developing greater power and efficiency on the part of those who are receiving instruction—not that industry exists to supplement school instruction. The wise coordinator knows that it is his function to win the confidence and support of the foremen rather than to ignore

them; he knows that he must work with them rather than try to dictate to them; as the latter plan will lead to almost certain failure.

Practical experience in industry is a distinct asset to a coordinator. To be able to meet men in industry on their own terms—to be able to speak their language and to know from first-hand experience what it means to labor—will help materially in establishing the mutual respect and confidence that are so essential in order that the foreman and the coordinator may work together to best advantage. The coordinator had better work on the assumption that industrial education must demonstrate its value to the men in the shop as well as to the management in the office, and that both will look for tangible results.

The impression must not be gained that the coordinator's job is limited to securing good instructional conditions on the trade side. It is very likely that his informal analysis of employment conditions and job requirements will prove of more than passing interest to all teachers who want to vitalize and motivate their instruction in ways that will appeal to learners who are about to leave the full-time school or who have already left it in order to go to work.

Trade Advisory Committees.—Owing to the fact that part-time cooperative boys are usually older, and hence more likely to be employed at trade, as distinguished from juvenile jobs, it is, if anything, more important to have trade advisory committees in connection with cooperative education than for part-time classes conducted under the compulsory continuation school laws. By way of amplification of the discussion that has already been presented in this chapter on advisory committees, we submit that the trade advisory committees should be of service in the following ways:

1. To serve in advisory capacities in various matters pertaining to trade and industrial education; as for instance, on courses of study, trade qualifications of teachers, housing and equipment.

2. To give publicity in every way possible to what is being done by the schools working with industry in their joint effort

to make desirable forms of training available to those who are engaged in the occupational life of the community. One of the factors that limit the service that might be rendered is lack of information about what the schools are today prepared to do.

3. To champion in the community, directly and indirectly, the cause of part-time cooperative education in particular and other forms of industrial education in a somewhat more general way. This may be done, for instance, through personal work with trade groups, through trade journals, and with individuals at opportune times.

4. To promote cooperation between industry and the schools, as for example by assisting in recruiting classes, in placing on jobs learners who have had the training offered, and by extending privileges to trade classes.

Records and Reports.—As an aid to the boy who is pursuing industrial education, it is advisable to keep records that will show the extent of his training in the subjects of special value vocationally. For example, just to record that the boy had two years of shop training is of value, but to have a record of the various machines he has worked upon, with the extent of the time spent at each, or the amount of time spent at certain other well recognized subdivisions of a trade is more valuable to the employer and to the teacher, consequently also to the boy himself.

It is good procedure to have the boy keep a record of the time he spends at the various kinds of jobs that he encounters during his training period both in school and when employed. A graphic representation of such data may bring out startling facts that might otherwise be overlooked.

In some schools it is customary to require cooperative boys to hand in to their teachers a carefully prepared written report which may deal with such topics as: "My experiences during the last two weeks," "How to make gray-iron castings," or "House painting." Writing as the boys do upon subjects of immediate vocational interest, there is an added incentive toward learning correct expression through written English. Through the subject matter presented the instructors often get sugges-

tions of value in how to motivate classroom and school shop instruction.

At Fitchburg, Massachusetts, the boys are supplied with a report form, eight inches by ten and a half inches in size, upon which they report upon the following items:[3]

1. Employed by.....Trade.....
2. Hours worked Mon.Tues.Wed.Thurs.Fri.Sat. Total .
3. Kind of work (lathe, planer, chipping, filing, blocking, weaving, etc.).
4. Description of work (size, color, kind of metal, etc.).
5. Description of machine (sketch parts; particular features).
6. Tools used, facts learned (speeds, feeds, time, etc.).
7. Comments.

In addition to reports made by the boys themselves, it is a good idea to secure short reports on each boy from the foreman under whom he works. The latter reports can be made out in the form of a printed report of convenient pocket size, which requires, primarily, mere checking on the foreman's part, for it must not take much time to make them out. These reports can be sent with the boy and may be brought back by him to the school thus saving time and postage.

Advantages.—Let us consider the merits of part-time cooperative education from the standpoint of the boy, the school, the employer, and the community. Each of these will be discussed in the order named.

1. Advantages to the Boy.—From the standpoint of the learner the cooperative course provides a far greater range of educational opportunity than can be made possible in all-day and in evening schools or classes. Whereas a city of 75,000 population may offer instruction in five or ten trades on a unit trade basis, a city of 10,000 population can offer trade training under the cooperative plan in more trades or occupations than a dozen—the number being limited only by the industrial char-

[3] Adapted from form used by the Industrial Department of the Fitchburg, Mass., High School.

acter of the community itself. There may be only one or two learners in any given line of work but still it is possible to place an apprentice at such work. An employer may hire two cooperative boys to alternate with one another, or he may even be satisfied to have only one boy report to him on an approximately half-time basis.

The cooperative plan also permits the boy to *learn while he earns.* In perhaps one out of three cases that is a necessity. If it were not for some form of part-time training many of these boys would have to quit school entirely. In addition to appealing to boys who somehow or other must earn while they learn, the cooperative plan also appeals to another group of boys who do not have to quit school to go to work, but who choose to do so, little realizing the importance of the best education that they can secure.

The plan furthermore enables the boy to get his shop training under actual shop conditions—conditions that frequently cannot be duplicated in the all-day schools even in the largest and wealthiest districts. It takes little reflective thought to show that the training value of work done in productive shops is far greater, in many respects, than where conditions are artificial, limited, and perhaps not representative of the latest developments in the trade.

If the boy is fortunate in his selection of the place of employment, if he has decided to take the job with the greatest future as distinguished from the one with the greatest immediate monetary return, then he can expect to have the advantages that come from first-hand contact with skilled workers, progressive foremen or alert engineers who will help him to think in terms of what he will be doing five, ten and twenty-five years hence. Under the cooperative plan, with a trained coordinator to guide, the boy will be able usually to find employment in the best shops or establishments in the community.

2. Advantages from a School Standpoint.—By utilizing the resources of industry for purposes of shop training, the school district may avoid either entirely or in part the heavy expense of providing suitable housing facilities for school shops, of

equipping those shops, and of furnishing the instructional supplies needed in them. This brings about an economic saving of a considerable amount.

The cooperative program also makes possible the realization of theory through immediate practical application; in other words, theory and practice go hand in hand, each modifying and influencing the other. In this way the cold-storage method of instruction is avoided. To be sure there are certain things that must be learned for the sake of the future but the chief emphasis in a part-time cooperative program is meeting the rather immediate needs that will gradually lead to future objectives.

Psychologically and educationally the cooperative plan is sound. We know that there can be little impression without expression. The plan calls for adequate opportunity for expression in the form of physical skills that must be mastered. The learner who is employed on a cooperative basis has a good opportunity for doing and thinking about doing. The standards to which work must be done are frequently exacting and call for the best efforts the learner can put forth. Exercise work where no useful product is at stake is seldom as interesting and as educative as real work carried out in a natural setting. The contact that the boys get with practical production work stimulates them to do their best. It is a common observation that they develop, through their industrial contacts, a seriousness of purpose that is directly reflected not alone in good shop work but also in good school work in other subjects.

Educationally it is distinctly worthwhile that boys learn to work with their hands as well as with their minds; it is important that there should be developed that wholesome respect and deep-seated love for constructive work that will be such an asset to the boy as he comes to manhood. Where can that be learned so well as right on the job where the world's work is being done?

3. Advantages to the Employer.—The chief advantage of cooperative education to the employer comes through his getting a naturally higher grade and a better trained working staff than is otherwise possible. This statement is based upon the

following evidence: In the first place, the combined standards of industry and the schools demand qualifications above and beyond those set up by either industry alone or the schools alone. Let us see how that is the case. Industry requires, let us say for a given job, considerable trade skill, but makes little demand for related knowledge. The school does just the opposite. Some boys can make good in industry but not in school; others in school but not in industry. The boys who can make good both in industry and in school are a more selected group and by native endowment a more capable and more versatile group than those who can meet the demands of industry and not the schools or vice versa. Consequently the boy who successfully completes the cooperative curriculum is a higher type of boy on the average than can be found through the usual employment methods without the screening process of the cooperative curriculum.

In the second place the cooperative boys are likely to possess more vision and the chances are that they will have, on the average, higher vocational ideals than boys who may otherwise be employed, for the very fact that they have taken up the cooperative curriculum is evidence that they are planning for a future requiring additional training and that they are willing to make the sacrifices that such a choice may necessitate for the sake of the future.

4. Advantages to the Community.—It is quite as much to the advantage of the community as it is to the individual that the latter be able to contribute vocationally. A community of vocationally competent people is likely to be a happy community —one with relatively little violence and waywardness—for people are usually law-abiding when at work, and if they work they will have neither much time nor much inclination to disobey the regulations that society has set up for its protection.

It is a well-known fact that if we want to maintain or add to our present standards of living we shall have to produce even better goods, and make those more economically than we are now able to make them, for the world is not standing still industrially speaking. There probably are numerous ways in

which that will be brought about, one of which is more thorough trade and industrial training for those who will do skilled work. It is also well known that the all-day vocational schools cannot hope to reach a relatively large number of those who are to be employed industrially. Other plans must be developed—part-time cooperative education is one of these.

When the standard of vocational competence is raised in a community, the standard of living goes up. A program of trade training must be regarded as an investment in the trade and manufacturing enterprises of the community. Industrial history records over and over how processes of manufacture have been modified and how certain industries have gained supremacy through consistent, continuous training and research.

It is more economical to train vocationally inclined persons already employed at any given jobs than to give pre-employment training to those who think they would like to work at certain trades or occupations, but who in many instances will not do so for any appreciable length of time. From this standpoint the cooperative program of training is superior to the unit trade plan.

Trade Extension Training?—Is part-time cooperative education trade preparatory or trade extension in type? Let us examine the case of a school district that operates a two-year unit trade program followed by two years calling for alternate periods spent in industry and in school. It is plain that the first two years are pre-employment or trade preparatory in type. In the last two years the boys work in industry on the alternate plan; they receive compensation and are subject to the provisions of the State Workmen's Compensation Act; they also come within the provisions of the Child Labor Act—in other words, they are legally considered as employed persons, not school boys. It may be that certain privileges are allowed them under the interpretation of State Laws, as for example, they may be allowed to operate power driven machinery under eighteen years of age because they are regarded as being in training, getting instruction that will reduce industrial accident hazards, whereas persons not in training may not be allowed to operate such ma-

chines until they are eighteen years of age. But that does not change their status; they are employed workers getting training supplemental to their employment, and hence they are to be regarded in such cases as getting trade extension training.

Reduces Exploitation.—Under the cooperative plan the exploitation of youth is reduced to a minimum because the board of education employs a trained coordinator to help find suitable employment and to follow up each boy to see that the latter both receives and gives what is fair and proper. It cannot well be argued that the cooperative plan results in exploitation when the board of education expressly employs a trained man to do all that can be done to give the boy a square deal. It does happen sometimes that a boy will not get all-around training in a given establishment, but if that is found out he is transferred. Any assistance that individuals or organizations can give that will make for better training conditions for the boys will be welcomed by the school authorities, for, it should be remembered, the schools have education as their chief function and reason for existence.

Over-Production.—There appears to be fear in some quarters that if the part-time cooperative plan should develop much that there would result an over-supply of trained craftsmen. It seems to us that such a condition is quite unlikely for several reasons: (1) Federal, state and local school authorities believe that vocational training should not be carried beyond the absorbing power of industry. Where trade agreements exist between employees and employers as to the number of apprentices to be trained, those agreements will be respected by the public schools; (2) The number of apprentices that have been trained under public auspices have, as far as we have been able to find out, nowhere come up to the number that existing trade agreements permit.

To say that the cooperative plan is not desirable because it trains two persons for each job is based on the practice of alternating those boys on a job during their training period. But does that prove that too many are being trained? Perhaps a given plant or establishment can only get one-tenth as many

cooperative apprentices as the number to which trade agreements entitle it. Would it still be training two persons for one job? Where will growing industries secure competently trained workers if they do not help to train them? What workable method of training employed persons is more practical or in any way better than part-time cooperative education?

Summary.—By part-time trade extension training is meant any training that is supplemental to the daily employment. When the time distribution is approximately that of alternate periods and when there is an understanding or agreement between industry and the schools for purposes of mutually supporting a training program it is often called a part-time cooperative program.

Part-time training programs need the assistance of trade advisory committees that will function in such matters as determining housing facilities; equipment needed; selecting competent instructors, giving publicity to the work of the school, championing the cause of the school in the community and in developing cooperative relations with industry.

To be acceptable, part-time training must be thoroughly practical; it should have immediate value and must be presented in ways that suit the capacities of those to be trained.

Part-time cooperative education was introduced on a collegiate basis by Dean Herman Schneider at the University of Cincinnati in 1906, and on a secondary school basis at Fitchburg, Massachusetts, in 1908. Cooperative education can be introduced in towns of about 10,000 population as well as in cities of many times that size. The curriculum may be one, two or three years in length. There may be simply an oral understanding between the schools and industry or there may be written indentures between the boy, the school and the employer. Labor may also be a party to the agreement.

A trained coordinator represents the boy's interests to the schools on one hand and to industry upon the other. The coordinator must, above all else, be a man of tact and common sense.

Among the advantages of cooperative education may be men-

tioned: (1) Distinct economies resulting from teaching the trade practice "on the job"; (2) combining theory and practice; (3) learning while earning; and (4) getting shop instruction from practical men under actual shop conditions.

QUESTIONS AND PROBLEMS

1. Does the National Vocational Education Act provide reimbursement for: (a) part-time general continuation education; (b) part-time trade preparatory training; (c) part-time trade extension education?

2. How may we best determine the extent to which cooperative education should be encouraged in any community?

3. In "selling" the cooperative plan to an industrial establishment is it sufficient to sell it to the management?

4. Is it more difficult to set up part-time cooperative relations with building trades than with metal trades? Give reasons for your answer.

5. Should a coordinator also have charge of the general guidance program of the school system in which he is employed?

6. If a boy is not receiving satisfactory training in industry shall the coordinator take up the matter with the management or with the foreman? Why?

7. How would you select the industrial members of a trade advisory committee?

8. What should be our attitude toward boys taking the cooperative course who wish to be excused during certain working hours in industry that conflict with school athletic events?

9. Should cooperative boys be required to work at skilled trades or occupations to which the school training is supplemental, or would you also enroll boys who work at semi-skilled jobs such as driving a truck or operating an automatic machine?

10. Does the introduction of a part-time cooperative course tend to shorten or to lengthen attendance at school; does it tend to draw pupils out of the full-time school; or does it continue to hold, on a part-time basis, boys who would otherwise sever their connection with the public schools?

11. How can we arrive at a fair wage rate for cooperative boys?

12. If a cooperative boy makes good at the trade but does poorly at his supplemental school work what would you do about it? If he does well in school but not on the job, how would you handle the case?

13. What special conditions of employment might bar boys otherwise eligible to work at the trade?

14. Assuming that the related subjects are to be taught to cooperative boys by "regular" high school teachers, how can they be assisted in the matter of developing instructional material and in the use of means and methods of teaching, especially suitable to the part-time group?

15. What can you suggest as to ways and means of winning the cooperation and support for part-time education of academic teachers or of the principal who regard such education as undesirable, perhaps because it somewhat interferes with regular class scheduling and routine?

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CHAPTER XIV

EVENING SCHOOLS AND CLASSES

The Worker's Schools.—When public evening schools of secondary grade were first established in the United States about the middle of the nineteenth century, there were few persons, if any, who could have foreseen the development that has taken place, particularly since the beginning of the century in which we live, in evening schools and classes. Our evening schools are truly the working people's schools; they serve in large measure those who left the all-day schools before they had secured the training that they need vocationally and avocationally. In line with democratic ideals of government has grown the evening school. No community of any appreciable size can long put off an evening school program if it really desires to conserve and to use to the best advantage the resources of its citizens. To provide evening schools for adults is no more than social justice. No longer can we regard adult education as something for which the public has little concern and responsibility. We well know that social welfare and democratic government are best furthered by making it possible for each person to develop as fully as possible in harmony with approved standards of social conduct and of citizenship. How different from earlier misgivings about the need for adult education are the words of John Finley who said: "I look forward to the day when we shall have a system of adult education in the state which will reach every man and woman as we are now reaching the child." [1]

In this fast moving industrial age there is abundant need for evening schools; there are literally hundreds of different subjects that are taught to adults who desire to be of more service than their present training permits. Sometimes such

[1] Adult Education in a Community. Published by the American Association for Adult Education. New York City, 1926, p. iii.

training is an absolute necessity. Think, for example, of the man or woman who is suddenly thrown out of employment through the development of a machine. Such a person should receive training that will readjust him or her to other work. Is it not to the best interests of the community to make such training more generally available? Many employed adults cannot for one reason or another attend part-time schools. For many of them it is a case of evening school or no school at all.

Types.—By way of amplification of the classification of evening schools mentioned in Chapter V, we wish at this time to describe somewhat more fully the types of evening schools and classes generally recognized. On the basis of objectives, evening schools and classes in the field of practical arts and vocational education may be divided into three groups: (1) General; (2) trade preparatory; and (3) trade extension.

1. General Evening Schools.—Under this classification come evening classes in manual training, manual arts, practical arts, mechanic arts and industrial arts. Often the purpose is to give exploratory, tryout or guidance emphasis to the instruction. All persons over the minimum age prescribed by law may enter irrespective of their vocational interest or background and sometimes women are to be found with men taking such courses. The purpose of the course is not vocational and therefore must not be judged by trade standards.

2. Trade Preparatory Evening Schools.—These classes differ from the preceding classes in that a definite vocational aim is set for the instruction offered. For instance the class may be one in electric wiring, in interior decorating, photography or automobile repair. In this case, however, the instruction is being given to persons who have not yet entered upon the trade for which they are preparing themselves. The instructor may be vocationally and professionally competent; the equipment may be the best that could be desired but there nevertheless is a certain weakness in the plan because the learners are what is termed a "mixed group"—they may represent a great range of occupations each with its own background but lacking a prime essential, namely, uniformity of trade background.

3. Trade Extension Evening Schools.—The chief difference between this type and the trade preparatory type lies in the fact that trade extension instruction is given to persons already employed at the trade or calling as distinguished from persons who are just getting ready to enter the trade. This latter group, therefore, is made up on the basis of vocational experience and has a more uniform apperceptive basis for instruction to be given.

In our opinion the passage of the National Vocational Education Act made a great forward stride toward making evening school instruction more definite and purposeful for employed men and women when it ruled that trade preparatory students are not to be mixed with those taking trade extension training. At the time that law went into effect it was rather general practice in evening schools to let anyone enroll for any course he desired.

Federal and State Aid.—In accordance with the provisions of the National Vocational Education Act, federal aid is available for only one type of evening school instruction—for that which is supplemental to the daily employment, and hence of the trade extension type. This is not to be taken as a slam at the other two types for it is generally recognized that they too have their use. It merely means that for purposes of *vocational* education trade extension training is preferred. The reasons will be brought out presently. It is held that the time that is devoted to evening classes is so short that unless the learner has a background of trade experience on the basis of which such instruction may be more readily understood, he cannot get enough out of evening instruction to warrant aiding that type of training as vocational education.

There is another aspect of the problem that probably was a factor in aiding, from federal funds, evening trade extension training to the exclusion of trade preparatory classes. If both types of classes were subsidized it would in all probability result in an over-supply of persons who would pretend to be skilled craftsmen whereas they would in reality have a most meager knowledge of their vocation. It can be seen, therefore, that there

is good reason back of the regulation limiting federal aid to trade extension training when it is given in the evening school.

Since education is a state function, the various states are free to use their own funds, except those used to match federal money, in any way they desire. They could, therefore aid evening trade preparatory training from such funds if they should care to do so. It is difficult to see the wisdom of giving special subsidy to evening trade preparatory training above such state aid or subsidy as may be made available for all forms of general education within the state.

Requirements.—The federal requirements for evening schools and classes operated in accordance with the National Vocational Education Act are outlined in considerable detail in Federal Board Bulletin 17.[2] Each state plan for vocational education is drawn up, provided federal aid is desired, so as to conform with the minimum requirements outlined in this bulletin. The general requirements applying to all forms of vocational industrial education are also discussed in Chapter V, "Kinds of Vocational Industrial Education." The principal special requirements to be kept in mind with reference to evening classes operated under the state and federal plan is that the minimum entrance age is sixteen instead of fourteen years of age as is the case in all-day and part-time classes, and that the controlling purpose of the instruction must be that it is supplemental to the day or regular employment.

Promoting Evening Classes.—In most communities large enough to support evening classes, there are a number of individual employers who believe in trade extension training and who are willing to cooperate in making an evening school program possible. These individuals are not limited to the "big business" group. Often they are men who operate small establishments—men who have themselves experienced the need for vocational education that was not available to them a few years ago. In some respects the small contractor or employer is more in need of assistance such as a public training program offers

[2] Federal Board for Vocational Education. *Trade and Industrial Education*, Part IV, "Evening Industrial Schools or Classes."

than is the large employer. Naturally it is easiest to promote the program when one can get the cooperation of individuals so situated that they can encourage a number of persons to enroll.

The most effective assistance in developing an evening trade and industrial school program is likely to come from interested groups such as: (a) the unions and (b) the employing groups. Both local, state and national associations can be of considerable assistance. Such associations usually have educational committees, the chairman of which is a good person to approach with reference to a public training enterprise since it is probable that he will have a more than average interest in matters pertaining to trade education. If a national or a state association has its headquarters in the city so much the better—it is that much easier to establish relations. The largest trade extension programs, both part-time and evening, are found in cities where the vocational director has actively sought the cooperation of the unions, the employers, or both. Without at least the approval, if not the active cooperation of such groups, even an extensive advertising campaign will bring small returns. Organizations such as those mentioned have it within their power to enforce attendance upon trade extension classes and their representatives can see to it that any agreement entered into will be enforced.

Second only in effectiveness to working with employee and employer groups is advertising. There are many different ways of bringing a school program to the attention of the public. Among these may be mentioned:

1. Posters.—Posters should be of a style that will appeal to the worker. The advertising methods used by some of the correspondence schools have worth-while suggestions. For example, a well-executed blueprint with a caption such as "Can you draw a plan like this? Training is free. Enroll now at the Academy High School, Erie, Pa." will appeal to persons mechanically inclined. Commercial advertisers have also proven to us that color in a poster is worth all it costs. Good design is always to be desired. In fact we do so much poster advertising these days that it is worth little unless it is well done.

2. Pay Envelopes.—Where the pay envelope system is used by an employer the director of vocational education may be able to get permission to furnish these bearing upon them brief advertising matter about courses in which the workers may have special interest. Such advertising is most effective if carried on just before classes are to be opened.

3. Circulars.—Attractive little circulars may be printed, and can be circulated through the children in all of the grades of the public school system, thus reaching a large proportion of the homes at a minimum cost, and at the same time in an effective way, for from son or daughter to the older members of the family these circulars can carry a message that has a personal appeal.

4. The Press.—Very important as an educational agency is the press. Illustrated news stories about what the schools are doing, or about what they propose to do are always in demand and may come to the attention of persons who are not reached easily in any other way. In a number of instances the local newspapers have gone to considerable expense to acquaint their readers with its public schools.

5. Shop Talks.—A short and snappy shop talk given by the director of vocational education, or by a qualified representative, as for example, one of the trade teachers, to employed men or women during their lunch period has its place as a promotional device. If the talk can be illustrated, so much the better.

6. Service Clubs.—Many employers may be reached through brief talks given under the auspices of the service clubs. Though such talks must be brief they frequently serve as the entering wedge that will be followed up by other means. It pays to take advantage of the courtesies extended by such clubs to representatives of the public schools, but these privileges must not be abused because that might prove quite fatal to the program of public education.

Relation to Day Program.—Evening trade extension classes can be operated in small as well as in large cities, for school shops are not necessarily required. It would be a mistake, however, to overlook the relationship that can readily be made to

exist between a successful day program and the evening program. The well-equipped shops used for day school purposes increase the field of service for the evening schools. Furthermore, if the day school instructors are carefully chosen with reference to their vocational competence they will make excellent evening school instructors. The industrial contacts made in furthering unit trade education can easily be made to serve the evening schools as well. Trade advisory committees appointed to cooperate with the all-day classes can function just as well for evening schools or classes also. When it comes to providing housing and equipment for the unit trade classes, it is easier to secure what is desired if the shops or laboratories will receive considerable use as would be the case if they are to be used for all-day, part-time and evening school classes.

The evening school program may help the all-day program through new ideas brought in by evening school instructors from the trade. It may also make it possible to hold certain competent day-school instructors, who would otherwise be lost, by enabling them to supplement their regular salary through evening school service.

From the standpoint of the boy, it is much to be desired that the continuity of his school training remain unbroken until he is adequately prepared for his vocation or until he has had the training that the schools have to offer. Thus pre-employment training in the all-day school should logically be followed by post-employment training given in either part-time trade extension or through evening trade extension classes.

Opportunities.—The opportunities for instruction for working men and women through evening trade extension classes are far beyond the service that is now available. That is said with all due regard for the numerous fine programs that are being conducted. Many factors will combine, we believe, to change public opinion, to the point where more communities will seek to be of every possible assistance to employed men and women by giving them the opportunity to attend evening classes that will better their economic and social condition.

An analysis of employment conditions will show that the

training required can be divided into two groups: shop practice and related training. In neither instance need the training program necessarily be limited to the facilities provided in the public school buildings. Classes in shop practice can be conducted anywhere provided only that the accommodations are satisfactory. It must be admitted, though, that it is rather difficult as a rule to secure the use of commercial shops for evening school classes. As far as shop training is concerned, therefore, the evening school program is limited largely by the school shops available.

In the field of related subjects this is by no means the case, as classes in related mathematics, trade science, blueprint reading, shop sketching, mechanical drawing and other related subjects can be taught in classrooms or in laboratories available in practically all school systems where there are a sufficient number of persons industrially employed to warrant operating evening classes. It is especially to be noted, then, that the major opportunity for evening school lies in the field of the related subjects. Most employed persons engaged in skilled occupations are more urgently in need of knowledge related to trade practice than they are in need of manipulative skill. The latter can usually be secured more easily during employment than can the former.

With increasing specialization as an assured fact in practically all trade and industrial pursuits, the schools can often render considerable help through supplemental shop training. The ideal, therefore, in evening school education should be to make available both shop and related subjects instruction, but an evening school program need not be held up because of the lack of shop facilities.

Undeveloped Fields.—If we should make a careful study of trade and industrial occupations we would no doubt find training opportunities for many occupations for which little or nothing is now being done under public auspices in any given community. Some of these rather unusual jobs may be: petroleum refining; fur cutting; color printing; color photography; lithography; dental mechanic; watch repairing; radio mainte-

nance; custom tailoring; barbering; aircraft operation; aircraft construction and repair; baking; heat treatment; welding; textile design; ornamental glassware design; telephony; boiler inspection, and literally hundreds of others. Some of these represent skilled occupations; others we would class as semi-skilled; some would be encountered rarely, others rather frequently. Each community will have to determine where it can best render service and the extent to which instruction should be given.

Locating Centers.—Other things being equal, attendance at evening classes is affected directly by their accessibility. The question must therefore be answered: "Where shall the classes be taught?" Shall it be in the residential district, relatively close to the homes of the workers so that they will have but a short distance to go after they have had the evening meal? Or would it be better to hold the classes close to the place of employment—perhaps in the manufacturing establishment itself? Apparently it will not do to settle this matter in an off-hand, theoretical way. It resolves itself into case studies. Some manufacturing districts or places of employment are miles away from the homes of the employed, and after working hours nearly everyone leaves that district. To open evening classes in such places is quite out of the question. Neither is it desirable to open evening schools in sections of a city that in any way present a special physical or social hazard to those who come to attend classes.

Time.—Evening classes for adults often begin at seven or half past seven, depending upon the working hours commonly in effect and upon the accessibility of the school. If possible it is well to start at seven o'clock as then classes will be over in ample time to give everyone a good night's rest. Classes usually run for two clock hours or for three forty-five minute periods per evening. Saturday is usually a poor day for evening classes so that a schedule calling for one section to meet on Monday and Thursday, and the other one on Tuesday and Friday gives a good distribution. It is the exceptional person who can well carry more than two evenings per week provided that he is employed during the day. If day school teachers are used

during the evening it is questionable whether they ought to be permitted to teach more than two, or at the most three evenings per week. If it is found desirable to use the school shop or laboratory during four nights per week it is usually best to use two teachers and have them alternate.

The length of the evening school term will be governed to some extent by climatic conditions and by employment conditions as well as by the extent of the subject matter to be taught. In a number of places evening classes begin about the first of October, run until Christmas, begin again after New Year's Day and continue to about the end of March.

It is desirable to have a definite time to begin and end each course and students should not be permitted to enroll whenever the spirit moves them, even though the instruction is largely individual.

Regularity of Attendance.—Regularity of attendance is much to be desired because at best the time that is devoted to evening school courses is short. The instructors try to teach only the most essential things. For that reason, as well as for others that need not be mentioned here the efficiency of the instruction, particularly where it is group instruction, is much impaired by irregular attendance. It is recognized that unemployment, changes of employment, illness, rush seasons and other factors may always operate to cause a certain amount of irregular attendance. We shall briefly discuss some of the means or devices that have been found of value in reducing to a minimum irregularity of attendance. The factors follow:

1. Union or Employer Demands.—Perhaps the most effective means of securing regular attendance is to be found when both the unions and the employers' associations take a definite stand upon the matter, and enforce their regulations or requirements. Similar efforts on the part of individual employers are also praiseworthy.

2. Short Unit Courses.—For purposes of evening school instruction short unit courses are better than long unit ones. The interest is better and it is often possible to increase the enrollment at the expiration of any unit so that better average at-

tendance can be secured. Dividing any course of study into a number of short units in no way impairs the instruction but makes for efficiency since unnecessary repetition is eliminated for those who have already had certain units and the learners are encouraged by the fact that they complete definite units of work rather than undertaking training that will not be completed until some time in the more or less remote future.

3. Careful Registration.—It is probably a good plan to require persons desiring evening school instruction to fill out application forms in advance of the opening of the school. These forms should be checked by some competent person such as the director of the evening vocational schools or classes or by the trade teachers, assuming that there is no one else in administrative control who is competent to pass upon cases involving trade training. The forms should contain items designed to show as clearly as possible the present payroll job, the kind and extent of previous trade experience, the extent of related training secured, and other items such as age, address, previous general education, etc., that are usually required of all evening school students. The name and address of the employer and his telephone number, as well as that of the trainee if he has one, should also be obtained.

It is held by some that advance registration permits an interval of time to elapse before school actually opens, and that some persons will change their minds during that time. Is it not probable that such persons would prove a doubtful asset, and that advance registration helps to eliminate floaters?

4. Good Teaching.—The teaching requirements with adults are in a number of respects more exacting than the demands made by day classes. To say that the certification requirements shall in general be the same in evening as in day classes will not guarantee satisfactory teaching. Some teachers who are successful in the all-day school cannot "deliver the goods" in evening trade extension classes. In fact some directors of vocational education say that their greatest problem in connection with the evening school program is to get teachers who will measure up to the job. Some of the older, more experienced and

best trained men on the day school staff prefer to spend their evenings with their families, saying that they can use all of their strength to do a good job with the day classes. As for men from the trade, the compensation paid for evening instruction may not be sufficient to attract the men most desired.

Evening school attendance is usually a pretty fair index of the teacher's ability. Poor teaching is almost certain to result in unsatisfactory attendance. The success of evening trade extension classes therefore depends quite as much upon the selection of the instructor as upon the selection of the men who will make up the class.

5. Enrollment Fee.—It is desirable to have a uniform enrollment fee for all courses. If certain shop or laboratory classes require considerable instructional material a separate charge for that is in order. It is assumed that there are no tuition charges in public evening schools. Some who have had extensive experience with evening schools believe that an enrollment fee between two and five dollars is not too high, and that if it can be returned in case of satisfactory attendance there is an additional incentive for many to attend as regularly as possible.

6. Unexcused Absence.—If it is made plain at the outset that unexcused absence will result in dismissal it may help in some cases. We must recognize, however, that adults attending evening schools have often to make real sacrifices. They may have to forego rest and leisure at the end of many a hard day of work, and they may have to postpone happy companionships. For reasons such as these every effort should be made to help students to measure up to the task they set for themselves in signing up for evening school instruction.

7. Competitive Records.—Manufacturing establishments find it worth while to develop certain types of charts or graphs illustrating in a readily understood manner the amount of production and accident prevention. Such records appeal to group loyalty as well as to the competitive instinct. While we have not seen such records used in connection with evening school attendance it appeals to us as being something worth trying. Such records can be kept on a class basis, the effort being to

see how many will end with perfect attendance; or the plan may be developed for the entire evening school.

Too Old to Learn?—Every now and then we find someone who believes in the age-old fallacy that after persons get beyond the day school age they find it difficult to learn. Men who have been out of school for a few years say that they cannot learn as easily as they could a few years ago. The reason for the apparent greater difficulty in learning may be attributed to factors other than that the mind has diminished in power to acquire knowledge. It is much more likely that if difficulty in learning is experienced by adults attending evening schools it may be caused by the partial loss of the study habit and the substitution of other habits, as for example, reading light literature primarily for recreational purposes, listening to the radio and other activities all perhaps desirable and educational but not requiring sustained effort as does systematic study. Another reason may be divided interest. Adults have responsibilities and concerns and worries such as are not shared by children and youths. They furthermore have had many more experiences and when a given thought is presented it may cause the adult mind to go on a sidetrack for the time being, thus diverting to a certain extent from the subject immediately in hand. A child may excel an adult in mere rote memorization largely because the child is practically free from experience recollections that would cause it to think of related things. In learning involving analysis and selective thinking the adult has the advantage.

The situation therefore resolves itself down to this: If the adult wants to learn, is willing to reestablish, if need be, the study habit and is willing to put forth the sustained effort that a child puts forth to learn he need not fear the results. It is rather gratifying to adults that Thorndike has, after scientific investigation, come to the conclusion that, by and large, persons below forty-five years of age are by no means too old to learn.[3] Not only that, but contemporary life gives abundant evidence of men and women who remained students and who achieved

[3] Thorndike, E. L., *Adult Learning*, Chapter XIII.

prominence in the realm of thought when they were past three score years of age.

Uniform Pay for Teachers?—In the field of general education it is common to have a fixed salary schedule that is uniform for all teachers of the given class, such as senior high school, junior high school and elementary school, irrespective of the subjects taught. In industry, however, each trade has its fixed wage rates and they are by no means uniform. For instance, a brick mason gets more than a stone mason; a plumber more than a carpenter and a foundryman more than a patternmaker. It is much more difficult to secure a man who can successfully teach ornamental plastering than it is to get someone to teach machine shop practice or automobile repair. In industry wages are governed largely by the law of supply and demand. Can the public schools afford to overlook that fact when they hire tradesmen to teach evening school classes? On the one hand there is the superintendent of schools who wants a uniform salary schedule for the evening school teachers of any given class. On the other hand there is the director of vocational education or the supervisor of evening trade classes who is "up against it" when it comes to trying to hire highly trained and exceptionally skilled craftsmen such as expert lithographers, industrial chemists, mining engineers, textile designers at the same compensation paid carpenters and electricians. There are several possible lines of procedure: (1) To appeal to the professional spirit of the high-priced men, pointing out the opportunity they would have as evening school instructors to help the men in their own trade or calling. This plan is sometimes used with success. (2) To admit frankly that tradesmen employed in industry will not be governed by the same regulations that apply to full-time teachers. This plan has its weaknesses as well as advantages. (3) To have the school district pay a uniform wage to all persons within each class, thus giving the same pay to tradesmen as to full-time teachers, but to permit either the unions or employers' associations or both to subsidize, from their own funds, the trade teachers above and beyond what is paid from public funds. (4) To deny industry the oppor-

tunity to subsidize the men teaching in the evening schools. Which of these plans is the best?

Seasonal Occupations.—In the case of seasonal occupations we have the opportunity to plan evening instruction for the weeks or months when the rush is not on. The evening school program can furthermore be so organized as to give to workers in successive units instruction related to different seasonal occupations. As a rule such training should be along lines that naturally dove-tail and work together as for example paper-hanging and house painting. It is also possible to give part-time and even full-time training to apprentices and learners during the slack season instead of evening instruction extending less intensively over more months of the year.

Taking the Initiative.—In the report of the Buffalo Educational Council on "Adult Education in a Community" there is given an interesting comparison of the growth of evening schools between the years 1915-16 and 1924-25.[4] There is shown the number of evening students per one hundred day students in Buffalo and in forty-one other cities. During this time the number of evening school students in Buffalo was increased from 23 to approximately 35 per hundred day students whereas the average for the forty-one other American cities having a population of 100,000 or over was increased only from eleven to twelve per cent. While the ratio in Buffalo was increased from one in five to one in three the average of the other cities was increased only one per cent, and furthermore, not one of these cities had a ratio of evening students to day students as high as had Buffalo.

We believe that Buffalo is a good example of a city where over a period of years the school authorities have taken the initiative in acquainting the people with what the schools are ready to do for employed adults as well as for children of day school age. Merely to advertise that the public schools are ready to provide evening classes when twenty or twenty-five

[4] Buffalo Educational Council, "Adult Education in a Community." Pp. 8-10.

persons petition for them is not enough and does not work out well in practice for the simple reason that employed men and women are not sufficiently well acquainted with modern vocational education to understand that the public schools can organize effective vocational instruction *for them.* It is therefore the opportunity of the schools to take the initiative and establish working relations with industry instead of expecting industry to knock at the school door.

But in Buffalo there is another reason for their splendid evening school program. It is that they have an exceptional day program of vocational industrial education, and the resources of the day program—administrative and supervisory officers, teachers and physical plant—have helped to make possible the evening school service that is being rendered there.

Effective Schools.—As schoolmen we want our various educational efforts to be as effective as possible. Sometimes tradition has hampered our efforts; in other instances inefficiency has come about because the evening school work particularly has been developing without careful supervision, the latter being left, for example, to the day school principal who already has a man-sized job. Some of the outstanding factors that enter into the efficiency of evening schools and classes are listed herewith:

1. Properly trained teachers.
2. Instruction based on job requirements.
3. Well-organized instruction.
4. Specific rather than general instruction.
5. Concrete rather than abstract instruction.
6. Instruction combining trade skill with mental effort, particularly reasoning and analysis.
7. Proper classification, grading and recording.
8. Short unit courses.
9. Classes small enough to permit individual instruction.
10. Adequate housing and equipment.
11. Sympathetic administration.
12. Cooperation and support of industry.

Summary.—In this chapter we have, by way of contrast, briefly mentioned evening instruction of the general, trade preparatory and trade extension types but the discussion throughout deals primarily with evening trade extension education. The chief requirements for such instruction that differ from those set up under the National Vocational Education Act for all-day schools and classes is that the minimum entrance age is sixteen and that the instruction must be supplemental to the day employment. There is an easily discernible relationship that normally holds between day and evening vocational schools. It is that day school equipment and teaching personnel are an asset in developing an evening school program. On the other hand small communities having no all-day trade training program can nevertheless conduct evening trade extension classes in the field of the related subjects.

There is evident today a changing public sentiment toward adult education. We see it as a means of enabling working men and women to live more complete lives, for vocational competence and good citizenship are inseparable. In spite of the development that part-time education witnessed during the last decade, the evening school still remains the chief source of educational opportunity to many of those who carry on the work that supports our civilization.

One of the most essential conditions to the success of an evening trade extension program is a close working relation with industry. Other conditions are important but none are as vital as are cooperation between the schools and industry. To develop such relations the schools must take the initiative—that is their opportunity.

Efficiency in evening trade extension schools and classes is first of all a matter of proper organization, secondly one of helpful supervision and sympathetic administration and finally a matter of good instruction involving teamwork all along the line, in which are included the school administration, industry, the instructional staff and the learners. The requirements set forth in the National Vocational Education Act, and the State Plans for Vocational Education have helped distinctly in mak-

ing evening trade and industrial education definitely helpful to employed adults. To be satisfied with present accomplishments —to rest upon our oars, so to speak—is unthinkable.

QUESTIONS AND PROBLEMS

1. Is a rehashed day school course of study suitable for evening school classes? State reasons.

2. What tangible assets does the skilled tradesman bring to the school in his capacity of evening school instructor?

3. Has his trade training been such as to assist him in teaching shop-work? Specify in what respects.

4. What effect is centralization of evening trade classes likely to have upon the efficiency of the program?

5. Why is it or is it not advisable to have day school administrators in charge of evening schools?

6. How should evening school students who are absent be followed up, and who should do it?

7. Is it desirable to pay evening school teachers on a per pupil basis?

8. To what extent should home study be required of adults attending: (a) shop classes; (b) related subjects classes?

9. What is, in your opinion, the best way to eliminate at the outset those who lack serious purpose?

10. How high an enrollment fee do you favor for public evening classes?

11. Discuss the use of instruction sheets for evening trade extension classes.

12. Should adults attending evening classes be required to keep note books? If so, will you examine them for purposes of grading?

13. Should day-school equipment, such as drafting instruments, be made available for evening classes or should the latter purchase such equipment?

14. How desirable are evening school certificates? Should they be issued for each unit completed or only for a comprehensive course involving attendance for a number of years?

15. Is it, in your opinion, feasible to offer in the larger cities evening trade or industrial curriculums that will be the equal or equivalent of the day trade curriculums given in those same cities?

16. What procedures can you suggest for developing resourcefulness, initiative and the problem-solving attitude on the part of adults in evening classes?

17. Have you ever used a question box with evening classes? How did you use it and with what success?

18. What differences significant to teaching are there between juveniles and adults?

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CHAPTER XV

ALL-DAY INDUSTRIAL SCHOOLS

Explanation of Terms.—The National Vocational Education Act of 1917 differentiates between two types of all-day schools. Brief mention of this was made in Chapter V, "Kinds of Industrial Education." The first is what is technically known as the "unit trade" school and the second type is called the "general industrial" school. Both of these terms will be explained. To begin with, the term "all-day" has come into common use as a means of indicating that it is not a part-time nor an evening school. It is therefore a term used partly for the sake of contrast and is not to be interpreted too literally, for our so-called "all-day" schools usually operate not for ten or twelve but for six hours per day, the latter being both the minimum length of day approved and the usual or standard practice, although some industrial schools operate for a slightly longer working day.

By a unit trade school is meant a public trade or industrial school operated on an all-day or a full-time basis and is so organized that only one trade or parts of one trade are taught to each pupil. That is, even though it may be a large school offering trade instruction in a dozen different trades, each shop and each curriculum is organized on a "unit" basis and each pupil pursues a curriculum that aims to fit him for a single specific trade or industrial pursuit. For purposes of definition it is immaterial whether the unit trade curriculum is one, two, three or even four years in length. Under the unit trade plan each learner is preparing himself for a single line of work such as automotive repair, printing, house wiring, machine shop practice, sheet-metal work, and the like. A unit trade school is a trade preparatory school and its purpose is clearly vocational—not pre-vocational; it seeks to fit persons definitely for a specific calling—not for industrial work in general.

Unit trade schools or classes may be housed and administered as separate units independent of, though cooperating with, other schools in the school system or they may, especially in the smaller places, be organized as departments in the high school. The merits of different plans of organization will be discussed later, as it is our primary purpose at this time merely to bring out in a general way what is meant by a unit trade school on the one hand and by a general industrial school on the other hand.

The general industrial school is also an all-day or full-time school operated as a trade preparatory vocational school. Its greatest point of departure from the unit trade school lies in the fact that the effort is made to teach the elements of several related trades to pupils rather than centering the training about the requirements of a single trade. We offer the following definition: *The general industrial school is a public full-time day trade preparatory school that gives instruction in the elements of several related trade or industrial pursuits to each pupil.* In order to avoid possible misunderstanding each type will now be discussed separately.

I. UNIT TRADE SCHOOLS AND CLASSES

Historical Background.—Unit trade schools have come to be realities only after long years of discussion and experimentation with trade and technical schools, some of which were operated for gain, some that were installed in correctional institutions, others that were of a quasi-private nature, and still others that were corporation schools. In order to avoid confusion on the part of those who do not have clearly in mind the essential differences between unit trade schools and technical high and other forms of industrial schools, we shall discuss technical schools in another chapter. Historically and chronologically the private and semi-private forms of technical and trade schools precede the unit trade school, but at this point we are interested chiefly in industrial education given in public schools and more particularly in unit trade schools.

Definiteness Essential.—Fundamentally the unit trade school represents an effort in public education to substitute specific for general trade training. Buried along with outgrown ideas in faculty psychology which dominated the educational thought of the opening years of the present century and for many years preceding that time is also the faith that vocational education will be best served through general training. We think we know positively that the effectiveness of vocational industrial education is to be judged in a large measure by the extent to which it is specific in both objectives and in its results; we believe that we cannot give both pre-vocational and vocational education at the same time; that we cannot teach a prospective carpenter how to lay out a complicated roof by teaching him how to build furniture; that there is but one way to develop efficiently auto mechanics into whose hands we, figuratively speaking, are willing to trust our lives, and that is to train them very definitely and specifically for the work that they must do "on the job." The unit trade school exists to do precisely that sort of thing.

A Transition School.—The unit trade school is also to be regarded as a *transition school* in that it has as one of its functions the job of helping pupils to step from the general education school to employment. Let us not underestimate the value of that service. It is by no means an easy matter for youngsters to make that change; it should not be made too abruptly. By giving young boys and girls trade preparatory training we can materially assist them in entering employment advantageously. The teachers in the unit trade schools understand better than do the average employer and the average foreman the strength as well as the weakness of the instruction that the pupils have had in the field of general education; they know, too, what is required to meet the demands of industry; and, all things considered, they are in a good position to be of real service to these young men and women who are so eagerly looking forward to occupational life, by giving them pre-employment training suited to their immaturity and their lack of previous vocational training and experience.

We may seriously question whether there is any plan of trade and industrial education that is better suited, under certain conditions, to prepare ninth or tenth grade boys for industry than by giving them a year or two of unit trade education, which in turn will be followed by trade extension training. The criticism is not so much directed against the validity and fitness of unit trade training that is properly conducted as it is against poorly operated programs and against the fact that it can be made available only in the more privileged communities, and even there in limited ways.

Guidance.—Adolescent youth needs guidance. The unit trade school serves as an effective guidance agency. Many parents who are quite unwilling to send their sons into the more or less unknown physical and moral hazards of occupational life until they have attained more maturity are willing to have them get vocational training under school control. So here again the unit trade school fills in a gap that might otherwise remain open.

The type of guidance exercised by the unit trade school is not to be confused with the pre-vocational, exploratory training given in the junior high school years through industrial arts education; the guidance opportunities in the unit trade school consist instead in constructive means of helping the boy to prepare himself for some definite trade or industrial pursuit which he has chosen and in developing attitudes, ideals and habits that he will use in the occupation that he hopes to follow. Negative instruction expressed in terms of "don'ts" will never suffice to keep adolescents in paths that their parents and society can approve. As matters now stand one out of every fourteen or sixteen boys who are fourteen and fifteen years of age is arrested by officers of the Law.[1] We have reason to believe that the unit trade school helps to correct such a situation by encouraging and requiring boys to expend their physical energies in constructive work and by teaching them ideals and habits, without which their conduct would be quite difficult to control.

[1] Cheley, Frank H., *The Job of Being a Dad*, p. 272. The W. A. Wilde Co., 1923.

Pre-employment Training.—Another reason for the unit trade school is that trade preparatory training is a distinct asset to persons seeking employment. Practically all employers would like to have apprentices and helpers who are familiar, to a certain extent, with the tools, materials, processes and other basic things involved in the trade. This relieves them of giving this elementary training and makes it possible to bring a worker in a relatively short time to the point where he will be an economic asset. In short, industry does not relish the breaking-in process largely because it is not profitable. In certain occupations it is next to impossible to secure employment without previous trade training. The public schools can often give pre-employment training that will easily double a boy's chances of getting a desirable job in industry.

Foundation for Larger Program.—In order to see the unit trade school in its true light in the larger communities—places having a population in the neighborhood of 25,000 population or more—let us think of the school not as a separate educational unit unrelated to other forms of trade or industrial education, but rather as the foundation or the cornerstone upon and around which the larger program centers. If we have a unit trade program, have the physical plant, the teaching personnel and the industrial contacts that such a program demands, it is a relatively easy matter to develop an even better balanced and more serviceable program by adding part-time and evening classes. Conversely it is an uphill fight to have part-time and evening programs of appreciable size and scope without a unit trade program.

In the smaller communities where the enrollment is small the expansion of the unit trade program may well be downward as well as upward. By this is meant that the facilities and equipment of the unit trade school may be used a part of the time to teach industrial arts education to boys of pre-trade school age. We do not consider that as an ideal arrangement but rather as a practical solution to conditions as they exist in some communities.

We would not be understood as favoring a unit trade pro-

gram to the exclusion of part-time and evening classes. Presumably any community has the legal right to operate, at its own expense, a four-year unit trade program if it wishes to do so, to the exclusion of other forms of vocational industrial education, but it is regarded as extremely unlikely that such a plan would best meet the economic, social and educational needs of the community.

Examples of Unit Trade Schools.—Unit trade training is being given in accordance with several plans of organization ranging all the way from departments in cosmopolitan high schools to separate state trade schools.

1. Department High School.—What is sauce for the goose is not necessarily sauce for the gander. At least that is the way different states and communities respond to this proposition of unit trade education. In vocational as well as in general education the size of the unit of administration is of considerable consequence. In the smaller communities with limited enrollments and restricted housing and equipment facilities, it frequently happens that the most feasible plan of having all-day trade training is to have it organized as a department in the high school. Such a plan may involve having the trade shops in the main high school building, or in an "annex" sometimes close to and at other times quite remote from the main building.

There are several possible advantages in this plan of organization. It makes it possible for the boys taking the unit trade work to enjoy the various general advantages that the larger school has to offer, such as the high school library, the auditorium with its programs, perhaps special instruction in music, the gymnasium, athletic fields, and membership in extra-curricular activities. If the enrollment were larger it would be possible to provide such desirable facilities for the trade group independently, but being a small group it might mean giving up those features. In some instances they mean much to the boys themselves, in other cases they are not missed much; but we know that those facilities are desirable, and somehow or other should be made available to trade as well as to other pupils.

Other things being equal it is also desirable to have vocational and non-vocational pupils intermingle in some of their classes as for example in the social studies and in English. The varying points of view presented by both groups are mutually helpful and joint participation in such subjects of study helps to reduce class feeling and to develop mutual respect and understanding. It is probable that American parents value these general, indirect educational features more highly for girls than for boys. At least they seem to be less ready to establish small unit trade schools for girls than for boys. There are other factors, too, that enter into that situation, the chief one being, probably, that we do not believe as firmly in trade education for girls as for boys. In spite of that it is no doubt fair to say that in general we are more concerned about "cultural" education for girls than for boys.

In the smaller school systems a unit trade school program is also dependent to a considerable extent upon the part-time services of regular high school teachers. If such teachers are carefully selected with reference to their interest in vocational education, and with respect to adaptiveness and initiative there is no apparent reason why they cannot make good in the general education subjects given to unit trade pupils and in some instances in subjects related to the trade work.

2. Departments in Larger School Systems.—The departmental plan of unit trade school organization is used extensively in a number of states and it is not limited to the smaller school systems. Where the plan has been introduced it no doubt has been regarded as a logical plan of organization. When other "special subjects" such as art, music and industrial arts were added to the curriculum they were annexed in just that way. Should it be done in the case of trade and industrial education? There are, in large cities as well as in small ones separately organized departments of unit trade education that are doing effective work. The opposite may also be said without fear of contradiction. In the larger places these unit trade departments are organized in: (a) Technical high schools; (b) cosmopolitan high schools; and (c) other high or elementary school buildings

but administratively a part of some high or elementary school. The theory is that overhead expense is saved and that proper coordination between the various phases of school work are thus facilitated.

But there is also another side to this problem. Without question there are possible disadvantages in the departmental plan of organization that sometimes become very real and very trying. Much depends upon whether or not the high school principal is as broad-minded as he thinks he is—whether or not he really can see industrial education in the proper light and will give it the opportunity to develop as it ought. That is a difficult thing to do for anyone who has spent many years in the general education field. What is more essential than coordinating the various forms of education given within a school system, is to coordinate industrial education with the demands of industry—that is the very life blood of effective industrial education.

The greatest single handicap to the departmental plan of organization is that the industrial program may be dominated by and operated in accordance with academic standards that will render ineffective the whole unit trade program. Somehow or other there must be freedom to use means and methods of teaching and there must be teachers and plans of organization and management that will directly reflect industrial requirements. In short, the unit trade program must be able to render its distinctive vocational service. If that is not possible under the departmental plan, then some other plan should be put into effect.

3. The Separate Trade School.—There are at least three types of such schools, namely, the separate local or city trade school, the county or district trade school, and the state trade school. We shall discuss first the separate local or city school. Is such a plan of organization desirable? Does it promote class feeling or is it truly democratic in spirit? For good and sufficient reasons we separate, if we can, the elementary school from the junior high school, the junior high school from the senior high school, the technical high school from the general high school, the school of agriculture in a college or university from the

schools of law, medicine, education and engineering in the same college or university. Is that undemocratic? No, they are merely separations that help to further the best interests of democratic government for each separate division still continues to function as an essential part of the public program of education. If in reality the separate trade school would breed class feeling we should be opposed to it; if it were wrong in principle or inefficient in its results we should likewise be hostile to it. But such claims, though sometimes made, cannot be charged to the plan of organization as such. There are many experienced teachers in vocational education who are ready to testify to the need of separate trade schools. Speaking from the standpoint of extended experience, Associate Superintendent of Schools F. H. Wing of Buffalo has the following to say with respect to separate versus the departmental plan of organizing trade schools: "It may be possible to create these conditions under the same roof with a regular elementary or high school but the chances are all against it. Even those who are working under these conditions with apparent success invariably testify that a separate building would be better. My advice is to get a separate building even if you have to use an 'old barn.' I say this after trying the under-the-same-roof plan five times."[2]

One of the bulletins issued by the Federal Board for Vocational Education contains the following statement that has a bearing on this problem: "The title 'all-day' has become standard terminology for the type of trade and industrial school which is best illustrated by the separate city trade school."[3] The chief reason why the separate trade school usually works out better in large cities is because it will have the necessary freedom to develop its service without being hampered by the standards and ideals that rightly control general education, but that do not have equal validity in vocational education.

[2] Wing, F. H., "The establishment of unit trade schools in cities of 25,000 or over," Bulletin 30, Industrial Education, p. 22, June, 1919. National Society for Vocational Education.

[3] Federal Board for Vocational Education, Bulletin 17, "Trade and Industrial Education," p. 84, Revised Edition, March, 1919.

Illustrations of the types of separate trade schools are: The Elm, Peckham, Seneca, McKinley and Burgard vocational schools, Buffalo, N. Y.; the Wm. Hood Dunwoody Industrial Institute, Minneapolis; the Ralston and the Connelly industrial schools, Pittsburgh, Pa.; The Printing Trades School, New York City; the Newark, New Jersey, school of the Essex County system; the Camden County, New Jersey, Vocational School; the Jules Mastbaum Vocational School, Philadelphia; the Delgado Trade School, New Orleans; The Frank Wiggins Trade School, Los Angeles; the Worcester Boys Trade School, Worcester, Massachusetts, and the Boston Trade School for Boys.

4. The County Trade School.—It is well known that many communities that are classified as urban by the federal census are too small to conduct unit trade schools. One practical way to overcome this is to make the county, rather than the city or local school district, the unit of administration.

The State of New Jersey has pioneered in this field. In 1913 a law was passed permitting vocational education to be organized on the county unit plan. In 1915 the Essex County Vocational Schools were organized. Wesley A. O'Leary was their first director. In New Jersey the county vocational schools are administered under a county board of five members appointed by the County Supervisor, which has the right to levy taxes to support such schools. Any persons in the county may attend, provided that they meet the entrance requirements. Transportation is paid for pupils attending such schools. Boys' schools and schools for girls are conducted separately. The schools are located so as to be as accessible as possible to those they aim to serve.

The Essex County Vocational Schools have had to go through much the same kinds of experiences that other forms of unit trade schools have encountered. At first there was the task of winning public confidence and support; of overcoming prejudice; of getting along with housing facilities that were far from ideal; of starting with pupils, many if not most of whom no one else was anxious to teach; of establishing helpful relations with industry; and of developing the instructional staff to meet the

problems incident to the program. In the short space of about a decade that system of county vocational schools has developed, and has won public confidence to the point where the city of Newark turned over its fine vocational school to the county and now the county schools have practically full charge of vocational education in the county. At the present time only one city in the county—Orange—is operating its own vocational school.

In the Essex County Vocational Schools are conducted unit trade, evening and part-time classes offering a wide range of courses for auto mechanics, carpenters, draftsmen, electricians, industrial chemists, metal trades, power plant engineering, printing, radio, sheet metal work, slide rule, etc.[4]

Tuition is free to residents of the county; non-residents pay $15 per month. Instructional materials are furnished free of charge. A junior employment bureau, free to persons in the county, is also conducted as a part of the school service.

Several other counties, namely, Middlesex and Camden, in addition to Essex, are conducting county vocational schools. It has been the policy since the beginning to develop the county school in close cooperation with industry. The equipment selected has been such as industry approves and the instructors have been chosen for their outstanding ability and for the recognition accorded them by industry. This admirable policy has had much to do with winning public approval for the schools.

The Best Unit?—Theoretically at least there may be advantages in organizing industrial schools on a district rather than on a county basis. To illustrate the principle involved let us take the case where several towns or communities are located fairly close to each other and where they have common interests industrially but geographically and politically they may be in two or more counties. From a school standpoint it might be best to form a school district embracing all of these towns irre-

[4] Beebe, Robert O. "The Essex County Vocational Schools—general information," bulletins 1-16. Director's Office, Hall of Records, Newark, N. J.

spective of county lines. A modified form of this situation sometimes occurs with respect to two adjoining states.

All things considered there is a big advantage in having educational boundaries coincide with those used for purposes of civil government. Legislation, taxation, supervision and administration are usually simplified by recognizing existing boundaries of government for educational boundaries. It therefore looks as though the county unit plan is likely to prove superior to the district plan when the latter takes in only parts of several counties. A district plan in which several counties form the unit may work out very well.

5. The State Trade School.—The state of Connecticut furnishes the outstanding example in the United States where the state unit plan has been put into effect. On June 3, 1903, the Governor of Connecticut was authorized to appoint a commission "to investigate practical means and methods of industrial and technical education." A report was presented to the General Assembly of 1905, which was by vote continued to the General Assembly of 1907. At that time a bill was introduced, based upon the recommendations of the committee, making it permissible for a town or for a joint school district made up of two or more towns to establish a trade school.

The first two schools were established in 1910, at Bridgeport and at New Britain. Since then many state trade schools have been established in Connecticut under the direction of F. J. Trinder, for many years state director of vocational education in Connecticut.[5] As a means of acquainting the public with what the state was doing Mr. Trinder developed a number of motion picture reels illustrating the trade schools. These pictures were shown in many parts of the United States and in foreign countries. The films were used so much that they became worn and new ones were made.

Housing, Equipment, Maintenance.—The Connecticut plan of state aid for vocational industrial education differs from

[5] Connecticut, State of, "Connecticut Trade and Vocational Education." Bulletin of the State Board of Education, Hartford, 1926.

those in effect in some other states. The city or town school committee furnished the necessary housing facilities, heat, light, water, power and janitor service. "State funds are expended for equipment, machinery and tools, materials and supplies, salaries of directors, office force and instructors, and such operating expenses as are not specified by contract to be furnished by the city or town in which a trade school is located."[6]

The state trade schools are free. No tuition is charged to residents of Connecticut. The state reimburses, in part, for the cost of transportation for out-of-town students. This is to the extent of one-half of the amount actually spent by the town for such students, but not exceeding $35 per student per year.

Entrance and Curriculum Requirements.—Enrollment, unless specified to the contrary, may take place at any time. The minimum age is fourteen for the day courses. Completion of the eighth grade is desired as a minimum requirement, though exception may be made to that. Approximately twenty per cent have had first and second year high school training.[7] The minimum age for evening classes is eighteen years. The all-day curriculums for boys are from 4800 to 5400 hours in length. A year is in the neighborhood of 2400 hours. About one-fourth of the time is devoted to basic training in English, mathematics, and science. The schools are open 52 weeks in the year and they are in session for eight hours for five days and four hours on Saturday mornings.

The instructors are tradesmen of outstanding ability and technical men who have been selected on the basis of their training, experience, personality and ability to teach their trade or their subjects.

Other Courses.—In addition to the full-time day courses there are also given evening courses running from September to April; part-time trade extension classes and cooperative courses. In Connecticut the cooperative plan calls for coopera-

[6] *Ibid.*, p. 5.

[7] "Information About Trade Schools," issued by the Director of Vocational Education.

tion between the high school and the trade school, five half-days being devoted to high school subjects and six half-days per week to trade school work. To the latter is added five weeks' full-time during the public school summer vacation.[8]

A special ninth grade cooperative course is offered at New Britain whereby the boy may spend four hours each day in the trade school and half of the regular school day in the junior high school. If following this the boy elects to continue his trade training he will get credit, hour for hour, for the shop-work done on the cooperative basis during his ninth year.

Cost.—It is claimed that the net cost per student hour is less than it is in the regular high schools. This is due in part no doubt to the longer school day and the longer school year as well as to the nature of the jobs upon which instruction is given.

Attendance at Other Districts.—A fundamental idea incorporated into the vocational education acts in some states may be illustrated by the school laws of Massachusetts and Pennsylvania which make it possible, under certain conditions, for persons desiring vocational training not given in their town or school district to attend such a vocational school or class in another district where the instruction is given. The Pennsylvania legislation specifies that the local school district shall pay the transportation, and that the state will reimburse said district for such expenditure, but this feature of the act has been weakened by the fact that for some years the legislature has failed to appropriate funds for that purpose. If the local school district is not financially able to pay the transportation it may have to be borne by the parents.

Federal Requirements.—The unit trade school, according to the National Vocational Education Act, is designed to meet the needs of persons over fourteen years of age. This is therefore a minimum standard. In actual practice it is impossible for boys under sixteen and sometimes under seventeen or eighteen to secure employment at skilled trades, thus this condition may

[8] Vocational Bulletin No. 1, State Board of Education, Hartford, 1926.

be reflected in the age of unit-trade pupils. Then, too, there is the growing tendency to postpone vocational education a little longer than was formerly the case.

The school day must be six hours in length, and the program must extend over five days per week so that the requirements are 30 hours per week of instruction. The school year must be nine months or 36 weeks long.

At least one-half of the time devoted to instruction must be given to practical shopwork. From 25 to 35 per cent of the total instructional time should be given over to the related subjects and the remainder to general or non-vocational education.

Initiating a Program.—From an administrative standpoint it is important to know what trades shall be taught on a unit trade basis. Evidently a selection must be made. We are no longer willing to subscribe to the old theory that if we cannot offer vocational education for all trades and occupations we should offer it in none; we do not regard it as class legislation to pick out the outstanding educational needs of the community and support them. We know that community, state and national welfare depend upon conserving individual as well as collective effort for the most necessary, the most vital and the most worth-while things to the exclusion of things for which a positive case cannot be made out.

The technique of finding out what trades shall be taught will not be discussed here as it is dealt with in Chapter XVII, "Industrial Education Surveys." No matter what means may be determined upon to get the facts required there are a number of things that should be known. Not all of these can be tabulated here as local requirements and conditions have much to do with it. For suggestive purposes there follows herewith a partial list of factors of special significance to the development of a unit trade program. We should know:

1. The absorbing power of the local industries—the opportunities for employment at the expiration of the training period.
2. The conditions of employment with respect to health,

safety, opportunity for further development and growth, physical and mental demands, compensation, etc.

3. The status of the industries. Are they growing; are they slipping; are they changing in line with new demands?

4. Can the school with the cooperation of industry offer satisfactory training at a reasonable cost?

5. Will such training, if offered, receive recognition toward journeymanship? If so, to what extent?

6. Whether community support is forthcoming, and what state aid, if any, is available.

7. The extent of the program to be undertaken.

8. The standards set forth in the state plan for vocational education whether or not state aid is anticipated.

Practical Work.—Section eleven of the National Act specifies that "at least half of the time of such instruction shall be given to practical work on a useful or productive basis." By "useful" and "productive" is not meant "useful in general" nor "productive in general" but useful as it pertains to the given trade and productive as it relates to the practice in the specific trade or occupation for which the trainee is preparing. If specialization and the factory method of production are typical of the trade or calling, then the school training must recognize that; if the jobbing method is in vogue in the trade—if each job is handled individually and highly specialized work is not typical of that particular trade—then the school training should again conform to that requirement; and again, if the nature of the work in industry at the trade is such that sometimes the highly specialized factory method is used and at other times work is conducted on a jobbing basis, it is but reasonable to expect that the instruction given in the school will once more be typical of industrial conditions and will include both repetitive and individual work. In some trades the highest type of work is done on a production or factory basis; in others it is done on an individual or jobbing basis, each job being different to some extent from the others.

There has been a good deal of abuse, in all-day schools, of

the interpretation made of "practical work on a productive basis."[9] This has in part been brought about by the fact that in some cases both administrators and teachers have clung to the pernicious theory that general mechanical training is as good for vocational purposes as is specific trade training. In other instances trade training is given on an exercise basis because it is difficult to provide the practical type of work that is needed for effective instruction. For instance, it is well known that it is more difficult to teach effectively carpentry, plumbing, steamfitting and house wiring on a unit trade basis than it is to teach printing, machine shop practice, automobile repair and patternmaking in the all-day school. This being the case we shall need to give due deliberation to whether or not these trades that are taught with difficulty on a unit trade basis should be handled entirely or in part in another way. It is often true that a limited amount of pre-employment training, as for instance one year of unit trade training, is highly desirable, whereas three or four years of such training would not be.

In order that the instruction may be "practical" it must measure up to trade standards in quality. Speed must at first be subordinated to quality, but it should be kept in mind that industry demands both. For that reason speed should be attained to the extent that educational considerations justify it, and certainly speed as well as quality should be a factor in the grade given the pupil.

Specialization.—It has been said by some that specialization in industry and the mechanization of industry will soon make the "all-around" broadly trained craftsman unnecessary, and hence, according to that theory, there will be little need for trade training. Prosser and Allen have discussed that point of view under the caption of "The Iron Man."[10] Relatively, to be sure, specialization is fast increasing, but as far as can now be determined we shall always need skilled workers to do the things that the automatic machine and the highly specialized operator

[9] See Federal Board for Vocational Education Bulletin 17, pp. 89-90.

[10] Prosser, Charles A. and Allen, Charles R. "Vocational Education in a Democracy," pp. 69-103.

cannot do. The line of promotion from the skilled craftsman to foreman, master mechanic or superintendent is more direct than from the machine operator; and the all-around trade work is more interesting, more energizing and less fatiguing. In times when unemployment prevails the all-around craftsman is the last to be furloughed and the first to be brought back. The statement made by Benjamin Franklin that "he that hath a trade hath an estate" is as true today as it was then. It may be advisable for a mechanic as well as for a doctor or a lawyer to be a specialist, but in industry it is frequently desirable to be both.

There is a place in the all-day trade school, particularly in the girls' trade schools, for highly specialized instruction given in an intensive manner. In any large city there are girls who at an early age must assume the responsibilities of providing not only for themselves but also for dependent members of the family. In many instances they have had no previous vocational training for wage-earning occupations. If the trade school can teach them a "trade" such as power machine operating in a garment industry, the millinery trade, dressmaking, and so forth, and can do that through relatively short, intensive courses, is that not socially and economically desirable?

Advertising.—The desirability of advertising and some of the means and methods used in school advertising have already been presented in connection with the discussion of evening schools and classes. What is true in that field is likewise true of the all-day schools. It pays to advertise. As school people we owe it to the taxpayers as well as to the pupils in the schools that the general public shall be informed concerning all aspects of the enterprise in which it has so much invested. It is just as essential for us to advertise public vocational education as it is for Heinz to advertise "57 Varieties," the United Biscuit Company, "Uneeda Biscuit," and the California Fruit Growers Exchange, "Sunkist" fruits. There are those who shrink from publicity and feel that advertising and education should not be mixed. It is conceivable, however, that there may be a big difference between advertising public education and advertising

persons who may happen to be connected with it. One can hardly expect the public to give hearty endorsement to something about which it is relatively uninformed.

Placement.—The junior placement service that is operated in connection with some vocational schools or by school districts, particularly for those who are about to leave school, has more than proven itself to be a worthy undertaking. We school people have been likened to the manufacturer who makes a product and then turns it out on the market without checking up to see in what respects it is and is not meeting market demands. Be it said for those engaged in vocational education, however, that the trade schools more than any other are placing their product and are following it up to see that it makes good and also to see that it receives its just dues in compensation appropriate to the ability of the trainee.

II. THE GENERAL INDUSTRIAL SCHOOL

For Towns Less Than 25,000.—School districts having a population of less than 25,000 persons can, if they so desire, establish in accordance with the Smith-Hughes Act,[11] a form of all-day trade school known as the general industrial school. This type of an all-day school was authorized and approved for federal aid largely as a means of providing industrial education in the smaller towns—especially those not having large, outstanding industries. This type of school, therefore, is most in demand in states where trades and industries are not the major enterprise. General industrial schools or classes are not to be confused with general industrial arts schools or classes as they are distinct in purpose and type. The general industrial school is a vocational school. It is called "general" industrial because it aims to prepare (as best it can) for more than one trade or occupation. It seeks to prepare for two or more trades that are as closely related as possible.

This type of an industrial school may be established where there is a demand for a limited supply of skilled workers—too

[11] See Federal Vocational Education Act (Public, No. 347, Sixty-fourth Congress), S.703.

limited to warrant the establishment of all-day industrial classes on what is known as a unit trade basis.

Let us take, for example, a city of 10,000 population having several garages, some machine shops, pattern shops, a sash and door factory, and a furniture factory. None of the industries may be able to absorb annually twenty apprentices or graduates from an all-day industrial school. The plan then may be to give boys a two- or three-year all-day course consisting of, let us say, one year of pattern making, one year of machine shop practice, and one of auto mechanics. The result will be neither a pretty well-qualified patternmaker, machinist nor auto mechanic, but a person who has had some elements of training in the three fields that will be an asset if he should secure a position in any one of the three fields mentioned and possibly in others.

There are advantages in such a plan as well as weaknesses. It lays a fairly broad partial foundation for any one of several trades, and it gives training that is of some value in two or more trades. In this way, it gives preparation toward a greater variety of trades or occupations than might be provided for on a unit trade basis. But the boys completing a two-year general industrial course will not have any single vocation as well in hand as if they had taken an all-day unit trade course.

A general industrial school may also be established as one means of bridging the gap between school and industry for boys who wish to get into trade work as early as possible. In many instances it is not lawful to employ boys at certain tasks, such as those involving the use of power-driven machinery, until they are at least sixteen, and sometimes eighteen years of age. A general industrial school may give pre-employment training and hold the boys in full-time school until they can meet the age requirement set up by law or otherwise.

Another possible way of serving the same end is to have legislative provisions that will enable boys under proper supervision, who are in training, to be exempt from the age restrictions regarding the operation of power machinery in industry.

Entrance Age.—Pupils must be over fourteen years of age. No specific academic requirement is set up by the federal law.

If possible the pupils should be grouped according to mental age or previous school experience. For example, some classes can be organized, having as a prerequisite the completion of the sixth school year and others the completion of the eighth school year.

Length of School Term.—The school term should be at least nine months or thirty-six weeks in length, although this is not stated in the federal act but is an interpretation. The week must be at least 25 hours in length instead of 30 as in the case of unit trade classes.

Departments in High Schools.—There is less reason to favor a separate school distinct from other schools in the district for the general industrial school than is the case with the unit trade school. Situated as it is in towns or communities of less than 25,000 population there frequently is not a sufficiently large enrollment, nor sufficient funds, to warrant establishing a separate school. The term "general industrial school" does not necessarily mean that a separate building is required. It is necessary, however, in case the "school" is organized as a department in a high, elementary or other school, to have a distinct organization and control just as is the case with the unit trade school organized on the departmental plan.

Since the program will be small the general industrial school should be in charge of a teaching director who spends the major portion of his time in teaching and a minor part—but as much as circumstances may require—in promotion, supervision, coordination, guidance and administration of the trade program.

Starting the Program.—The process of initiating the program follows, in the main, the procedure that is recognized as sound for unit trade programs with the difference that in this case more assistance may be sought from the state office as the local community probably will not have available the services of an experienced director who knows just what to do. Among the things to be anticipated are:

1. Number of pupils to be served.
2. Housing facilities.

3. Length of the curriculum in years.
4. Trades to be taught.
5. Nature of equipment and its cost.
6. Suitable instructors.
7. Contacts with industry.

Length of Curriculum.—Owing to the conditions under which the general industrial school has to operate, it is quite certain that a two-year curriculum followed by one or two years of cooperative training is far superior to a three- or four-year all-day general industrial school curriclum. It must be recognized that from a trade standpoint the general industrial school cannot be as efficient as the unit trade school, and both—but particularly the general industrial school—need the first-hand contacts with actual trade conditions that can be provided through part-time cooperative education.

The trades taught in the school must not only be related but must, as far as possible, be basic to the community. The curriculum in a small school may center around one-half year each of: (a) Some woodworking trade such as patternmaking; (b) sheet-metal or electrical work; (c) machine shop practice; and (d) automotive repair work. Or if preferred it may consist of one year each of two related trades, such as carpentry and cabinet making; machine shop practice and automobile repair; or other combinations.

Nature of Curriculum.—As to objectives the curriculum should coincide with that of the unit trade school. It is not a school organized for pre-vocational try-out training, but for definite, concentrated, hard vocational training given with the same relative distribution of time between shop, related and non-vocational subjects as in the unit trade school.

There is constant danger, owing to the conditions under which the general industrial school frequently operates, that it may function more as a general education school than as a trade school. For this and for other reasons the general industrial school is considered, in some quarters at least, as a form of industrial education of questionable value as compared with other forms or organization that might be introduced instead.

Summary.—Every type of industrial education that is provided for in the National Vocational Education Act has its advantages; every type is suited to some local situations. In some states, in spite of the fact that no special effort has been made to develop unit trade schools and classes, statistics show a rather uniform and consistent gain in enrollment. Why is this? Evidently there are reasons, not always the same ones either.

Advantages.—Among them may be mentioned:

1. The lengthened compulsory school period keeps many pupils in school longer than formerly.
2. Certain industries employing skilled labor have voluntarily raised the minimum age of employment.
3. Many employers who "do not like to be bothered" with sending employed boys and girls to part-time schools, yet favor pre-employment training such as can be given in industrial schools operating on an all-day basis.
4. Many parents favor the unit trade school because it defers, for a few years, actual entrance into industry on the part of their children who are, in their judgment, too young to face the problems and responsibilities of adult life.
5. The instructional conditions, in certain trades, may be better for beginners at least in unit trade schools as compared with certain industries as locally conducted.
6. The social, educational and moral atmosphere and influence of the school is considered valuable to youth of adolescent years.

Disadvantages.—Among the possible disadvantages of the all-day schools may be mentioned:

1. The danger of having academic objectives and standards take the place of true standards appropriate to industrial education.
2. The danger of non-progressiveness—of letting the instruction become artificial and obsolete.
3. The relatively high cost.

4. The limited number of trades for which training can be given.

It must be recognized, however, that these are not inherent weaknesses, but simply possible conditions that can be overcome or reduced to a minimum through good organization, supervision and administration. The all-day industrial schools have given evidence of healthy development under the National Vocational Education Act.

Statistical Summary.—By way of presenting very briefly figures showing the development in all types of industrial education organized under the provisions of the national act, there is given herewith a table adapted from the annual report of the Federal Board.

TABLE X. NUMBERS OF PUPILS ENROLLED IN VOCATIONAL TRADE AND INDUSTRIAL SCHOOLS OR CLASSES ORGANIZED UNDER STATE PLANS FOR VOCATIONAL EDUCATION APPROVED BY THE FEDERAL BOARD FOR VOCATIONAL EDUCATION*

Type	1924	1925	1926	1927	1928	1929
Evening	88,966	124,134	135,117	136,971	159,023	166,914
Part-time trade extension	36,636	39,168	52,386	48,476	49,753	46,820
Part-time general continuation	267,199	284,057	298,842	324,003	348,018	341,767
All-day	35,672	43,432	51,393	54,738	62,754	71,877
All types	428,473	490,791	537,738	564,188	619,548	627,378

* Adapted from the Thirteenth Annual Report to Congress of the Federal Board for Vocational Education as given in Table 3, page 61.

QUESTIONS AND PROBLEMS

1. Distinguish between a general industrial school and a general industrial arts shop.

2. Summarize the legal requirements in accordance with which a gen-

eral industrial school may be operated in conformity with the Smith-Hughes Act.

3. State the chief advantages of the general industrial school.

4. State the requirements set up in your state plan for vocational education for unit trade education.

5. In how small a town do you consider it practical to conduct unit trade courses?

6. Compare the importance of day industrial schools with evening industrial schools or classes.

7. How can one justify the fact that some school districts that have good school shops use them only for day instruction?

8. Who should teach the related subjects in a unit trade school—the shop teacher, technical school graduates or "regular" high school teachers?

9. Are men preferred to women as teachers of: (a) the related subjects; and (b) general education subjects in all-day unit trade schools for boys?

10. Discuss the relative advantages of: (a) securing a complete shop equipment at the outset as compared with (b) distributing the cost of equipment over two or three years.

11. Discuss safety devices as they apply to your shop.

12. What possible relationship can you see between unit trade schools and service to semi-skilled workers?

13. Illustrate how false objectives and standards may be used with all-day trade schools.

14. Describe a plan whereby the related subjects will be truly related to the shopwork.

15. To what extent has unit trade school shop equipment become obsolete in the last ten or fifteen years in: (a) the machine shop; (b) the print shop; (c) the electrical shop; (d) the wood sheet metal shop; (e) automobile shop; (f) the various shops; (g) the drafting room; and (h) other shops or laboratories?

16. Discuss the place of advisory committees with respect to all-day trade schools.

17. Prepare a list of outstanding boys' trade schools in the United States.

18. Prepare an estimate, based on the last annual report of the Federal Board for Vocational Education showing the number of pupil-hours of instruction given in the United States through: (a) part-time general continuation; (b) part-time trade extension; (c) all-day schools and classes; and (d) evening schools and classes.

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CHAPTER XVI

INDUSTRIAL EDUCATION FOR GIRLS AND WOMEN

A National Problem.—Fifty years ago the employment of girls and women in industry did not present the challenging problem with which we are confronted today. Not only has there been since that time an appreciable increase in the number of girls and women who are gainfully employed but the nature of employment, other than homemaking which has so far not been included in gainful employment, has changed materially in line with the industrial and commercial developments that have taken place.

In 1880, according to the thirteenth census, 14.7 per cent of all females over 10 years of age were gainfully employed; by 1920 that percentage had increased to 21.1 per cent.[1] But more significant even than the numbers so engaged are the changes in the kinds of employment involved. In the short space of ten years, from 1910 to 1920, the per cent gainfully engaged in agricultural occupations dropped from 22.4 per cent to 12.7 per cent, and in domestic service from 31.3 per cent to 25.6 per cent. At the same time there was an increase in clerical occupations from 7.3 per cent to 16.7 per cent; in professional service from 9.12 to 11.9 per cent whereas the per cent engaged in manufacturing and mechanical industries remained about the same, changing from 22.5 per cent in 1910 to 22.6 per cent in 1920.[2]

In reality industrial education for girls and women should not be regarded as a problem, but should be conceived in terms of many inter-related problems, each of which has significant

[1] U. S. Dept. of Labor Bulletin No. 27, p. 2; 1927.

[2] *Ibid.*, p. 6.

social, economic and educational bearings upon family life and upon community, state and national welfare.

In trying to present some of these problems it will serve our purpose to recognize several logical classifications. On the one hand the training problems may be grouped into: (a) pre-employment training and (b) education given to girls and women gainfully employed; on the other hand, training problems may be grouped with reference to special cases as follows:

1. Training for girls who will be gainfully employed for a few years only.
2. Training for girls who will remain gainfully employed for an extended number of years.
3. Training for married women who already have, or who desire to re-enter gainful employment.

The Halo of Tradition.—Our attitude toward industrial education for girls and women is influenced a great deal by traditional conceptions of a woman's place in society. For years we have considered that girls and women had as their special function the work that centered around homemaking. On the farm women helped—as they still do in some countries, though not so commonly in America—with harvesting and with animal, poultry, fruit and dairy husbandry; where fishing was the chief vocation they helped to a certain extent, but in general woman's work was domestic or had to do with home industries. Today we still feel that a woman's greatest responsibility to society as well as her greatest opportunity centers in the home. It therefore goes without saying that all girls and women should have homemaking education. No other training that could be given is likely to prove as useful and indispensable. But in addition to this there are other demands. The so-called domestic occupations have already changed in many ways. Baking, formerly a home industry exclusively, is no longer limited that way. In the baking industry many men and boys are employed. The textile industry has long ago outgrown the spinning wheel stage and now from forty to sixty per cent of those engaged in it are men. Men are also to be found as cooks, chefs, interior decora-

tors, upholsterers, millinery and costume designers and are employed in many other jobs formerly considered to be the special province of girls and women. Conversely women are to an increasing extent refusing to abide by tradition merely for the tradition's sake. With the greater freedom that has come to women and as the natural consequence of changed industrial, economic and social conditions, women are finding greater opportunity by entering and "making good" at a great variety of occupations from which, under the old order of things they had been barred by tradition rather than by lack of ability. The nature of the personnel, whether it be male or female, is still determined to some extent by customs and traditions in the vocation, but more and more the job requirements, the working conditions and the available sources of labor are having much to do with who is employed. If girls can check roller bearings more accurately and more speedily than men, they are likely to become so employed; if they can make women's shoes, or pack fruit as well as or better than men can, they again will find employment; if girls can have shorter working hours, more congenial working conditions and greater opportunity to be with other young people of their own age and with those of both sexes by working in a factory as compared with working in domestic service, then we can expect the girls to choose the factory. And that is not to be interpreted as meaning that the modern girl has lost her interest in homemaking and in things domestic. There is nothing fundamentally wrong in choosing factory employment instead of selecting domestic employment.

Purposeful Activity.—We cannot accurately estimate the great social and economic importance of developing along sound lines the instinctive human desire to want to do constructive work. That fundamental instinct is not limited to boys and men but is a potent force also in girls and women. Nothing is more deadening than inactivity. We may reason that with the aid of highly developed machines and with the assistance of the marvelous advances that have been made in the realm of science we can dispense with the work of girls and women in industry. Such a point of view will be only a stumbling block, for we may

be certain that women quite as much as men will see to it that they will be engaged in purposeful activity—something that is needed, something that is essential and vital to our lives.

State and Federal Aid.—The same considerations that justify and make necessary state and federal aid for trade and industrial education for boys and men apply with equal validity and force to industrial education for girls. There is so much that is involved in human resources, so much in social welfare and so much in terms of economic gain to society that it is particularly appropriate to make state and federal aid available for study, promotion, supervision and for teachers who will devote their efforts to assisting employed girls and women to improve themselves vocationally and who will help to make it possible for them to measure up to higher standards in various ways.

The very fact that there are more unsolved problems connected with industrial training for girls and women than there are in industrial education for men is a challenge to us to tackle the job more generally than it has so far been taken up; the very fact that there are few people well informed about the problems of working girls and women and still fewer who are devoting their energies in this cause is a challenge to us to use such state and federal aid and such other resources as are available now in the interests of the girls and women who are helping in so many new and different ways to do the world's work in the realm of trade and industrial undertakings.

The National Vocational Education Act and the various state plans for vocational education, in so far as our knowledge goes, are drawn up without reference to sex. The same requirements that obtain for trade and industrial training for men also hold for women. It is therefore not necessary to mention them here in detail.

I. PRE-EMPLOYMENT TRAINING

Trade Schools for Girls.—In our previous discussion of trade schools little or no mention was made of girls' trade schools. This was done purposely because in a number of re-

spects the girls' trade schools present different problems and to make comparisons only tends toward confusion. The word "trade" does not mean the same thing in both fields. We have indicated that a trade implies an extended apprenticeship of about four years. That is true in the mechanical pursuits followed primarily by men, but does not hold for the trades pursued by girls and women gainfully employed in industry. Apprenticeship does not exist in trades at which girls and women are employed, though the term "apprenticeship training" is used when an industry gives training on the job in the progressive steps of jobs. Girls enter as assistants or as helpers, not as apprentices. A girl may be prepared for gainful employment at a "trade," such as power-machine operating or cosmetology, in a fraction of the time it takes to prepare a journeyman electrician, printer or machinist.

Owing to the different conditions found in trades in which girls are employed as compared with those hiring men, the girls' trade schools must be different. Instead of having curriculums from two to four years in length for girls about to enter employment, they run from short intensive courses of about six months to two years. The longer courses are not warranted for the young girl who stays in industry only five or at best ten years.

The Manhattan Trade School for Girls.—Among the public trade schools for girls in the United States this school is the pioneer. It was opened in 1902 in response to a group of women who saw the need for a school of that sort. From a small beginning this school has developed into a large, modern school with an annex and a waiting list extending into the hundreds. Miss Florence Marshall, the principal, has held that position for a number of years. It may be remembered that she was a member of the committee appointed by President Woodrow Wilson to report upon the need for national aid for vocational education. The service that the Manhattan trade school is rendering far exceeds in value what it costs to operate the school. Located "down town" in New York City, the school is in close touch with trades open to girls and women. Through

intensive courses given by tradeswomen of outstanding skill and recognized ability the girls get pre-employment training in a variety of trades that enables them to be not only self-supporting but to support other members of the family who cannot earn wages.

The Boston Trade School for Girls.—This is also one of the pioneer girls' trade schools and like the Manhattan Trade School it, too, has within recent years moved into new quarters. The school had its origin in a summer sewing class started by a group of public-spirited women in 1904. In 1909 the school was taken over by the Boston School Committee. The school is free to residents of the commonwealth. It is open twelve months in the year and one may enroll at any time. Evening classes are also maintained.

Upon entering, each full-time girl is given try-out experiences on the basis of which she makes a selection from the courses offered, among them being: (1) machine operating; (2) dressmaking; (3) millinery; (4) catering; (5) trade design; and (6) commercial arts and crafts. The full-time students spend three-fourths of their time at trade work and the remaining one-fourth on academic work, which includes spoken and written English, business forms and practice, buying, selling, sketching, coloring, hygiene and citizenship.

Extension courses are offered to women in evening classes and in day classes where there are vacancies. The school stresses beauty of design and perfection of workmanship.[3]

The Philadelphia Trade School for Girls.—Like the two trade schools just mentioned the Philadelphia Trade School for Girls also originally was started under private auspices. The school was taken over by the Board of Education in 1917, and Miss Cleo Murtland was its first principal. Handicapped by poor housing facilities and an undesirable location, the school has nevertheless made a name for itself. First with Miss Murtland and for a number of years now with Miss Ruth Sill in charge, the school has been of great service to girls and women looking forward to, or engaged in gainful employment. The

[3] Boston Public Schools. Annual Report of the Superintendent, October, 1927, pp. 38-40.

school is now housed in a fine new building, the old one being retained for the present as an annex. The instruction is very practical and is given as it is also at the Manhattan Trade School on an individual basis based somewhat upon the Dalton Plan. The school keeps in touch with employment demands and maintains a follow-up service to make sure that the girls "make good" and also to see that they are dealt with fairly. Some of the girls step right into exclusive custom shops and are able to do satisfactorily the high-grade work that is required in such places. The visitor to the school is impressed with the seriousness of purpose manifested by the students; by the practical character of the instruction; by the accomplishments achieved in short training periods; by the competent teaching staff and by the sane and constructive administration of the school that no one can give quite as well as women who have themselves served at women's trades and who know from first-hand experience what is most essential to the students the school seeks to serve.

What has been said of this school applies also to others that are not mentioned here specifically by name. It is neither feasible nor desirable for our purposes to give an account of all of the girls' trade schools that are being conducted under public auspices in the twenty-five states listed in the 1928 Annual Report to Congress made by the Federal Board for Vocational Education.

The Girls' Trade School of Pittsburgh.—The beginning of the girls' trade schools in Pittsburgh, Pennsylvania, dates back approximately seventeen years. At that time a school was opened for both boys and girls who desired a larger amount of hand training than was available in other branches of the school system. In 1926 the Girls' Trade School was opened in the north side of the city. In 1928 another trade school for girls—the Bellefield Trade School was opened. The enrollment, according to Miss Jane C. Bryce, principal, has grown from 60 in February, 1926, to 630 in February, 1930. The trades taught are much the same as those given in Boston, New York, and other large cities.

Locating the School.—We believe that practically all principals of girls' trade schools will agree that the school should be housed in a separate building where the administration of this special form of trade training can develop without hindrance or interference on the part of persons unfamiliar with the fundamental requirements. In order to secure this so much to be desired liberty, a number of the schools have had to start in remodeled old school buildings. Without a question that is a handicap. The matter of location has likewise often resolved itself down to taking the best one available rather than selecting one that would be ideal. If it is possible to exercise choice in the matter the selection can be made with reference to factors such as the following:

1. Nearness to girl and women employing industries.
2. Accessibility to the homes.
3. Transportation facilities.
4. Character of the district.
5. Present and probable future trends.

It is important to avoid the impression that the school is to serve a special class or group because that may seriously affect attendance. It is desirable to so locate the school that its site will meet with wholehearted approval of parents, educational authorities and industry. It is especially important that girls and women may go to and fro, at all times of the day and during evenings with a maximum of safety. Playgrounds are to be desired. If real estate is very expensive they can be provided on the roof of the building.

Selecting the Principal and Staff.—Among the prime essentials to be sought in a principal of a girl's trade school are: (a) Initiative and organizing ability; (b) supervisory and administrative ability; (c) enthusiasm for the work embraced in the functions of the school; (d) satisfactory trade experience or contact; and (e) sympathetic and helpful attitude toward those the school hopes to serve and toward the teaching staff.

The teaching staff should be one that is well balanced from the standpoint of general education, technical training and trade

experience and skill. For the related subjects and for the elementary forms of the trade work, professionally well trained teachers with satisfactory trade contact are probably to be preferred, but for the advanced trade practice it is best to select teachers who have had an exceptionally rich trade experience. The general, non-vocational subjects should be taught by teachers who can motivate those subjects through practical illustrations selected from the field of the learner's past experience, vocational and avocational interests. It is important that all teachers should be adaptable, for to be successful a trade school must be progressive. New instructional material must constantly be developed, new methods and devices must be tried out and new processes must be evaluated.

There is one principle that should be adhered to in selecting both the principal and the teaching staff, it is that extreme care must be taken that they are the best in their various lines that it is possible to secure. Most trade schools for girls are located in cities having a population of about 100,000 persons or more. In cities of that kind a few thousand dollars do not make much difference in the school budget one way or the other, but failure to put over a good job means failure indeed! The future of the whole program must not be jeopardized through notions of false economy.

The ideal way to select the trade teachers is through a combination of oral, written and performance tests supplemented with "paper qualifications" indicating the nature and extent of their previous school, trade and professional training and experience.

Typical Trades Taught.—In order to give a concrete picture of the nature of trades that are taught in girls' trade schools, the following suggestive list is offered:

Trade sewing and dressmaking.
Power machine operating.
Millinery and flower making.
Cosmetology or beauty parlor practice.
Nursing, both practical and registered.
Cooking, catering and specialty service.

These trades are among those usually open to women and girls. In addition to this the trade school may help to prepare, through evening and part-time classes, for many other trades, for some of which it will give shop training, for others training in the field of the related subjects such as trade mathematics, textiles and design. Among the non-vocational subjects that may be taught are: English, civics, history, commercial geography and physical education.

Preliminary Interview.—The shorter the period of training the more necessary it is to have from the very outset as clear an understanding as possible of the background and aim of those to be trained. In a four-year college curriculum as much as a year may be spent in general orientation and foundation courses before specialization is undertaken. This procedure would not fit the girls' trade schools. If we wish to measure with a given degree or percentage of accuracy persons running the hundred-yard dash and the ten-mile run, it is obvious that the measuring device in the hundred-yard dash must be relatively more accurate to get comparable results. Similarly where short intensive courses are given, it becomes doubly necessary to have a preliminary interview with each girl and if possible with her mother, father or guardian prior to enrollment. The cumulative personal history cards now being kept by some school districts are a distinct help but will not replace the interview.

The girls who desire to enter the trade school vary considerably in special aptitudes, and capacity, in training, home background and in vocational aim. The best guidance can only be given after a rather extended interview followed by close follow-up contacts.

The young people who enter the trade school also vary enormously in temperamental and emotional stability. Some are quiet and reserved, others are effusive; some are nervous, others have an easy-going way about them; some have the right qualities for certain kinds of work whereas they would probably not succeed in others. When, for instance, a girl desires to take up beauty parlor work the principal must be reasonably

sure that she possesses the qualities that will warrant training her for such a job. By no means all girls who would like to enter that trade are by nature especially qualified for it. The same thing holds true of many types of employment.

Guidance, Placement and Follow-up.—We take for granted that vocational guidance is recognized as an essential service to be made available to all youth in the public schools. While we are far from having reached the point where such service is generally available, there are an encouraging number of school districts or schools where effective programs of that sort are in force. Among these are certainly to be included the leading girls' trade schools. The girls who attend these schools are in special need of vocational guidance, for placement and for follow-up service. Owing in part to the fact that most girls do not look forward to continuous service in gainful employments, they are to a certain extent opportunists in industrial occupations. Tradition helps to keep them so. They are willing, often, to accept wages and employment conditions that boys would not accept; they feel more helpless and less self-assertive than do boys, with the result that they are more apt to be imposed upon. The trade school girl therefore especially needs the guidance and assistance of the placement and follow-up service that is rendered by representatives of the trade school who know the conditions of employment as they are to be found in the community.

Many girls also need social guidance. Numbers of them come from homes where they have not had the advantages of home training that is so valuable in helping adolescents adjust themselves to the adult world.

Specialization.—Women have in past ages not only been the homemakers but they have had a part in trades and industries under the organization of labor adopted by the Greeks and Romans, during the Middle Ages in convents, later as members of craft-guilds and in the domestic or cottage system of home industries. With the factory system of production and as a result of high specialization of manufacture many operative jobs have been thrown open to girls and women. A study of occu-

pations as given in the federal census reveals that there are very few occupations in the manufacturing and mechanical field that are pursued exclusively by men and boys. Literally millions of women are today employed at highly specialized jobs in occupations formerly open to men alone.

In thinking in terms of trade training for girls and women we must differentiate clearly between jobs requiring practically no previous school training and those having higher requirements. With reference to this point Myers cites an extreme case where out of 4,032 different jobs in one industry, 79 per cent required only one day to one week of training and only one per cent required more than one year.[4]

The Continuation School Girl.—Various types of part-time training are conducted for employed girls and women. Numerically by far the largest program has to do with girls who attend the compulsory, part-time continuation schools. An interesting study of children fourteen and fifteen years of age has recently been made by Miss Beatrice McConnell, covering 25,037 children employed in 1926-1927 in Pennsylvania.[5] In Pennsylvania 16 per cent of the fourteen- and fifteen-year-old children are at work and 84 per cent are in school, so one out of every six goes to work between those ages. More girls than boys begin work at that time, the proportion being 56 per cent for the girls and 44 per cent for the boys. This is probably primarily due to the fact that there are, in Pennsylvania, more opportunities open for juvenile labor to girls than to boys. Only five per cent of the twenty-five thousand cases studied were foreign born. In terms of schooling, 25 per cent had completed the sixth grade; 37 per cent the seventh grade; 29 per cent the eighth grade and 9 per cent had completed one or more years of high school.

[4] Myers, George E. "The Problem of Vocational Guidance," p. 153. Quoted from Mead, J. E.—*Salvage of Men.* Ford Motor Co., 1919.

[5] Commonwealth of Pennsylvania, Department of Labor and Industry. Special Bulletin 21, 1927, "Fourteen and Fifteen Year Old Children in Industry," Harrisburg, Pa.

It is significant that three out of four of these youngsters were employed in manufacturing industries. Only seven per cent were employed in domestic service, while silk, hosiery and other knit goods, and clothing industries each had more employed than were employed in domestic service.

It was found that one-half of the group was not earning more than $8.56 per week; approximately 20 per cent earned less than $7.00 per week; one-third were earning $10.00 or more and seven per cent $15.00 or more per week.

A small proportion of the working permit girls receive trade preparatory training and fewer still get trade extension training. The reason for this is based largely on the fact that most of the girls are employed at low and semi-skilled jobs or highly specialized jobs for which the schools can give neither pre-employment nor supplemental training. The few who can go to the girls' trade schools or to part-time schools conducted by industry or by industry in cooperation with the public schools are, in the main, the favored few who prove the exception to the rule.

The shop and laboratory facilities of a girl's trade school should be used wherever possible for trade preparatory and for trade extension training for girls employed on working permits. Speaking broadly, and keeping in mind the central tendencies as revealed by numerous studies that have been made of young working girls, the prospects for the continuation school girl do not look bright unless the trade school can help her out of the narrow rut into which she passes through force of circumstances. Without much of a background of general education, without broad vocational skill or knowledge as far as industry is concerned, and with marriage as the most definite aim, the continuation school girl is likely to work for five or ten years at low-paid, highly specialized operative work, will then marry and in about one case out of four will need to continue to work for wages after she is married. Here is a challenge that we as educators have not yet adequately met except in isolated cases. What an opportunity to assist society through trade training

that will open the door of opportunity to happier and more complete living for thousands of girls and women!

II. GIRLS AND WOMEN GAINFULLY EMPLOYED

The Married Woman in Industry.—Some of the difficult problems in the field of trade training for girls and women have to do with the married woman in industry. The married woman almost invariably has two jobs—the one at which she is gainfully employed and homemaking. There are instances where the husband, older children or other members of the family assist in the duties of homemaking when the mother is employed but as a rule the chief burden falls upon the mother. For this reason the working hours for married women ought not to exceed eight hours per day and forty-four hours per week, as a maximum. It is also necessary to observe certain health standards so that child-bearing may not be made more hazardous. Both the mother's health and that of the child demand that industrial employment be discontinued for at least six weeks before and six weeks after child birth. The necessity for thus interrupting employment tends to make it more difficult for the married woman to secure work but her economic necessity may be great and it therefore will not help matters to take the attitude that married women should not enter gainful employment.

In certain industries where employment may be seasonal, as for instance in coal mining districts, the husbands find it exceedingly difficult at times to provide for the family. Under conditions such as that many girls and married women enter low-paid, highly specialized factory employment.

Matrimony is no doubt a serious handicap toward preparation for skilled work for women because many who naturally look forward to it are unwilling to spend an extended learning period either in the trade school or in industry to acquire the necessary training. The probability that gainful employment may be discontinued indefinitely at any time or at least interrupted makes employers hesitate in many instances about hiring married women for the skilled jobs. In unskilled and semi-

than men. The following is a list of such industries prepared by Miss Dempsey.[8]

Bank-book, envelope, tag, paper-bag, etc. factories
Candy factories
Clothing industries
  Corset factories
  Glove factories
  Shirt, collar, and cuff factories
  Other clothing factories
Knitting mills
Lace and embroidery mills
Linen mills
Paper-box factories
Silk mills

In addition to these there has been great numerical gain in women employed as semi-skilled operatives in food, iron and steel and clothing industries. A large gain was made in automotive and electrical supply industries.

Commercial Occupations.—Douglas believes that women have a better opportunity in the commercial field than in manufacturing. Says he, "The situation is brighter in the mercantile occupations. More training is undoubtedly needed by the workers, although it is questionable whether it can extend very far."[9] In 1920 about 14.5 per cent of women gainfully employed were working in commercial occupations. The percentage appears to be on the increase. Salesmanship offers both low-paid and well-paid opportunities depending largely upon the job requirements.

Professional Occupations.—Among the professional occupations in which women are largely engaged, the greatest development during the decade from 1910 to 1920 was made in trained nursing, there being reported in the census an increase

[8] U. S. Bureau of Labor, The Women's Bureau. *The Occupational Progress of Women*, pp. 11, 12.

[9] Douglas, Paul H. "American Apprenticeship and Industrial Education," p. 174.

from 76,508 to 143,664. Very substantial gains were also made in the number of religious, charity and welfare workers, librarians, college presidents and professors, designers, draftsmen and inventors, and in photography.

Striking advances, Leonard points out, have been made in the past few decades in the character of professional training, in the standards, ethics, state licensing and the heightened interest manifested in them.[10] In the main, professional training does not come within the province of the provisions of the National Vocational Education Act of 1917 but there are evidently border-line vocations, as for instance nursing, designing and drafting.

Women are to a larger extent getting into supervisory and managerial positions. Women insurance agents doubled and real estate agents trebled from 1910 to 1920, while women stock brokers increased 81.6 per cent.[11]

Training for New Crafts.—A study was conducted under the auspices of the Women's Bureau of the U. S. Department of Labor by Miss Nienburg who, in discussing the topic of existing training facilities for new crafts, points out that the public schools in the more industrial states offer training in a variety of trades in which boys and men are alone enrolled and which in her opinion should also be open to girls and women. Among these crafts she mentions:[12]

Machine shop practice
Tool making
Tool designing
Tool and die making
Shop mathematics
Mechanical drafting
Blueprint reading
Metallurgy
Automobile repair
Motor-cycle mechanics
Gas engineering
Strength of materials and heat treatment
Sheet-metal drafting
Electrical instrument making

[10] Leonard, Robert J., Chapter III "Trends in Education for the Professions" in Lee's *Objectives and Problems of Vocational Education.*

[11] U. S. Department of Labor, The Women's Bureau, Bulletin No. 27, p. 22.

[12] U. S. Department of Labor, The Women's Bureau, Bulletin No. 13, p. 36.

Patternmaking
Sheet metal work
Welding
Steam engineering
Cabinet making
Wood milling
Wood finishing

Skill Most Important?—What is the most important, the most valuable, contribution the trade school makes to the fourteen- and fifteen-year-old girl? Is it trade skill? Is it trade knowledge? Those are both very important; they are both absolutely essential to efficiency in a skilled trade. But there is something more important even than these that the trade school gives. It is the moral, social and physical training that the girl gets. Sound health is at the basis of vocational success. The trade school girl receives a careful physical examination from the nurse or the doctor; she is given corrective physical training if it is needed; she is told what vocations or forms of employment are suitable for her and what forms she must not undertake; she is taught social customs and conventions and particularly habits of cleanliness and how to dress appropriately. The moral strain upon the young girl just entering employment is sometimes great. The trade school supplements the home influences in helping her to meet the problems that the day brings forth. A good trade school does not let go of the girl until it is definitely known that she can paddle her own canoe.

Advisory Committees.—Advisory committees such as are recommended for boys' trade schools are also necessary for girls' trade schools. Mrs. Burdick reported in 1922 the following with reference to the Philadelphia Trade School for Girls:[13] "The Advisory Committee of the Girls' Trade School includes representation from the following organizations: Emergency Aid, Women's Trade Union League, White-Williams Foundation, Carson College for Girls, Seybert Foundation, the Manufacturers' Association, and various departments of the local public school organization."

[13] Public Education and Child Labor Association of Pennsylvania. "Report of the Survey of the Public Schools of Philadelphia." Book III, p. 240.

In addition to persons who are officially represented on advisory committees there are many more with which the progressive trade school keeps in touch. These persons belong to all sorts of associations and are engaged in a great variety of work; some of them are former trade school girls. The tie that binds them together is: service to employed girls and women. It makes entrance upon employment much easier when the employer says: "Oh yes, I know about your trade school. I have visited the school several times. The girls we get through the school usually make good."

Semi-skilled Employments.—The public trade schools, both for men and those for women, are not in a position to do much for the semi-skilled employments and for persons working at highly specialized operative jobs. The cost of installing and of operating the necessary equipment is prohibitive. It seems to be the consensus of opinion that under present-day conditions we shall have to rely upon industry to train such workers themselves either on the production floor or through vestibule training departments.[14] There is opportunity to find out more than we now know of just what the training opportunities are for the 8,000,000 or more girls and women who are engaged in productive employments. The first step consists in extending the inquiries that have already been made concerning employment in industry, for upon an analysis of existing conditions we can base progressive programs of education. The public educational authorities can at this time no doubt help the trade training given in industrial establishments most: (a) By cooperating with industry in the training programs undertaken in the plants. This may necessitate public supervision and control of the training features, but as the schools and industry get to understand each other better that will be less of an obstacle than it has been in the past; (b) by making available teacher-training service to men and women charged directly with training responsibilities by industry; and (c) through conference-

[14] Federal Board for Vocational Education, Seventh Annual Report, p. 65.

leader-training and foreman-training which will take up for consideration problems involving plant training.

Private Initiative.—The extent to which women are striving to prepare themselves for vocational competence in trades having an extended period of preparation can be estimated from the list of fifty-eight trades listed as being taught through private initiative and not taught in 1922 under the auspices of public educational institutions.[15] These 58 trades were distributed as follows: Clothing trades, 14; electrical trades, 3, watch and jewelry trades, 4; metal trades, 6; chemical trades, 4; textile trades, 9; millinery trades, 6; printing and publishing trades, 8; miscellaneous trades, 4.

A commendable type of cooperation exists in the state of Michigan where attendance upon approved privately conducted apprentice and trade schools is accepted as the equivalent of compulsory part-time school attendance. The policy involved in that case may well be more generally adopted by the states.

Developing the Program.—In our eagerness to develop trade and industrial education for men we have, in the main, overlooked the job of developing trade education for girls and women. The latter, however, have come to assume such an important part in helping to carry on the industrial work of our country that simple justice demands that vocational education should be made available to them and without respect to sex. If there are training needs in certain women-employing trades such training must not be withheld because the prospective trainees are women; if training is needed by girls and women neither must it be withheld because competition may result. If such a policy had been pursued in the past there would be no vocational education.

The program of trade training for girls and women has been slow in developing for a variety of reasons among them being that not only the general public but educators are poorly informed concerning the whole matter—and that is true in spite of the fact that much work has been done on the part of a few

[15] Federal Board for Vocational Education, Sixth Annual Report, p. 54, 1922.

individuals and a few organizations to acquaint us with the essential facts. Now that women have the right and have learned to exercise the right of franchise we may look for more definite insistence upon their sharing with men the blessings of public vocational education as a form of service that goes with, or rather is part and parcel of, democratic government.

We believe that it is clearly evident from past experience that local communities and states will develop trade programs for girls and women in proportion to their making persons directly responsible for developing just such types of training. Our experience with trade training with men has taught us that not only all-day schools but particularly part-time trade extension and evening trade extension training must be most carefully and minutely planned; must be wisely organized and conducted; must be judiciously administered, and must be everlastingly followed up in order to have a going program. There would be no part-time cooperative programs of industrial education today if it were not for tactful and trained coordinators who are on the job all of the time; there would be no evening trade programs if someone were not especially delegated to look after them. Why then shall we assume that trade training for girls and women will develop in line with the need for it unless persons have that as their sole responsibility? The job is entirely too large to be seriously considered as a side issue or as an added responsibility for state or local supervisors or directors who now are engaged in promoting trade training primarily for men.

The matter of who shall promote this work locally and in the states at large must also be settled "without respect to sex." If we believe that women can do that work most effectively because of their background of experience, their special training or because of other qualifications then let us see to it that they have the opportunity to do the job; if we believe that men because of the training and experience they have had will do best in that work, let us employ them; if we are uncertain let us try both men and women, selecting them not because they are men nor because they are women but because they appear to have

the best professional requirements for the work that is to be done.

Summary.—Trade training for girls and women is given for the express purpose of assisting in their entering gainful employment advantageously; in order to help them to become more proficient in the work in which they are engaged; and in making it possible for them to advance in the industry. Tradition has to a large extent influenced our thinking about what constitutes proper employment for girls and women, but traditions are being upset by women in their effort to have, in fact as well as in theory, equality of opportunity with men. Women are quite as determined as are men to do something—it does not matter so much what—that is distinctly worthwhile.

State and federal aid is available to assist in promoting trade training for girls on the same basis as it is for trade training for men. The word "trade" has a different connotation in the realm of women's trades than it has in trades primarily employing men in that girls' "trades" are learned in less than four years—from six months to two years is more general—and the apprenticeship system is not in vogue in women's trades.

Most trade schools for girls and women were started under private auspices and most of them started in old buildings but that is to be preferred to trying to combine such a trade school with a general education school under the same roof.

The instruction in the trade schools is largely individual. In selecting the teaching staff, it pays to get the best that can be attracted. The typical trades taught on an all-day basis are trades that are usually open to girls and women.

A personal interview is important at the time of registration; and guidance, placement and follow-up service is stressed. Specialization in industry greatly affects the training program.

The continuation school girl industrially employed usually works at semi-skilled or highly specialized operative jobs for low wages.

The married woman in industry presents a number of social and economic problems. Satisfactory solutions have not yet been worked out in general, although progressive employers

deserve credit for the standards they have set and for the policies that they observe with reference to married women. Married women may be just as permanent workers as men, many of whom change jobs frequently.

General home economics differs from vocational homemaking in objectives and both differ from specialized training given for purposes of gainful employment in vocations in the fields of food, clothing and shelter.

There are a number of manufacturing industries in which women employees predominate. Private enterprise has made training available to girls and women in a variety of trades. The public schools will more generally rise to their responsibility. In developing the program it is essential to put people specifically in charge of trade training for girls and women—the best qualified persons that can be secured.

QUESTIONS AND PROBLEMS

1. Discuss the statement: "Women do need education during their industrial life, but this education should be primarily for life and only secondarily for industry."[18]

2. Why is it more difficult for a woman to secure promotion in industry than it is for a man to secure it?

3. Should the principalship in a girls' trade school be filled by a woman or may a man be acceptable?

4. Does gainful employment in industry prior to marriage tend to unfit girls for homemaking?

5. Do women and girls seriously compete with men in industrial employments?

6. Give a report on Miss Edna Bryner's study on "Dressmaking and Millinery" found in the Cleveland Foundation Education Survey.

7. Give a summary of Mrs. Iris Prouty O'Leary's "An Investigation of Department Store Work to determine the Possibilities of Vocational Training," 4th Report, N. Y. State Factory Investigation Committee.

8. Distinguish between vocational homemaking and trade training in the fields of food, shelter and clothing.

9. What is the difference in aim, if any, between general home economics and vocational homemaking?

[18] Douglas, Paul H. *American Apprenticeship and Industrial Education*, p. 174.

10. Distinguish if possible between dressmaking as a trade and dressmaking as homemaking training.

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CHAPTER XVII

INDUSTRIAL EDUCATION SURVEYS

Types of Surveys.—Surveys in the field of industrial education may, for convenience, be grouped into two classes: (1) long, comprehensive surveys; and (2) short investigations and studies. The time and money required to make surveys are important factors. There is no use in getting detailed data on something that is well known.

Surveys are also classified as: (1) general; and (2) specific. A general survey is one in which the general field is covered, as for example, public, private and parochial industrial education in its various forms in a community. It aims to make a sort of an over-view study of many things in order to determine upon a program of industrial education that is not clearly visualized or definitely circumscribed at the outset.

A specific survey is one that deals with a definite problem, such as apprenticeship education in one or more building trades or metal trades. Certain specific needs are known to exist, and the survey is undertaken in order to present all available facts relating to the particular thing being studied.

Why have Surveys?—The justification and need for surveys arises from the fact that progress depends upon a thorough knowledge of the facts in any given situation together with an analysis and evaluation of these facts on the basis of what is considered to be the best practice as shown by previous experience. To be effective a survey must present the necessary facts in a way to make them be understood by all persons interested.

Before entering upon a program of trade training in a community it is advisable to find out just what the need or the absorbing power is for trained or partly trained workers in the various occupations. It should likewise be determined what

particular form or forms of trade or industrial education may best be given in the community.

Sometimes one form, such as part-time trade extension training, is most desired and in other communities the same training may need to be given through evening trade extension classes. In other instances some communities like part-time cooperative training and others prefer unit trade classes, and some want both or even all forms of training.

There are many factors that influence the matter of choice of types of training. It is such information as this that is properly assembled through an industrial education survey.

Shop training particularly requires expensive space and equipment. A community should know definitely to what extent it is warranted in undertaking any specific kind of trade or industrial training. It is, therefore, in line with good business practice to make a survey or study of requirements before starting the organization of such instruction.

Public Support.—The matter of securing public support for a survey is of prime importance. It cannot well be secured without the cooperation of all of the various groups or organizations that will be affected. The support that a survey will receive depends to a large extent upon who is sponsoring it. If the person or persons who initiate the survey have, or can win and hold, the confidence of the public or the persons concerned, well and good; if not, the survey may as well not be made. Integrity of purpose is fundamental. A survey that is undertaken for selfish or ulterior motives is likely to act as a boomerang.

Local initiative is valuable in giving public confidence and support to a survey. If a survey is stimulated by someone outside of the community, as for example by a representative of a teacher-training institution, a state, or a federal official, then it is frequently wise to so arrange matters that the local superintendent of schools is given the credit. It will strengthen the latter's position in the community, and will assure better support for the survey.

In every community there are persons whose influence in

educational matters is valuable. Some of them are manufacturers, others are business men, professional men, shop superintendents, foremen, school administrators, retired men and women with educational interest, etc. There are still others of the "me-too" type—they want to take part in all affairs of public concern. If public support is sought none of these should be overlooked. They cannot all participate in the survey, but they can be given the opportunity to endorse the program before it is begun, and the recommendations when they are made.

Support may also be brought to a survey by the addition to the survey staff of one or more persons from outside of the community, who have had recognized experience in making surveys and investigations of the type needed in a given community. Every town or city has its local problems, but practically all of them have common elements so that a person who has had broad teaching, supervisory, administrative, trade or survey experience can bring something to the survey that should prove of value.

Local Pride.—Nearly all communities take pride in their social, educational and religious institutions. This is natural and fortunate. It presents a special problem, however, for the person or group of persons who may wish to make recommendations, growing out of a survey, that will bring about changes.

If changes are to be made they should come (apparently at least) from the community itself. Everyone resents taking plans that may be successful in a given locality or community and planting them abruptly into foreign soil. It is more effective to bring about necessary and desirable changes in ways that will not hurt local pride and that will actually strengthen the faith that people have in their home town, their own institutions, and the men and women they know.

Impersonal Recommendations.—The practice rather frequently followed of calling upon outside assistance in survey work is based on several sound considerations:

(1) Recommendations should be made from an impersonal standpoint. This may necessitate outside help.

(2) Recommendations should be made without fear or favor. Evidently this may be hard to do if one's employment is likely to be at stake, or if it may result in a professional or other gain.

Persons somewhat removed from the local situation, and those having a position or tenure not affected by the recommendations made can therefore make a contribution to the survey.

Knowledge of Local Conditions.—If survey recommendations are to be acceptable to a community, they must reflect a knowledge of local conditions beyond those that can be given in the survey report. There are at times local factors that are not easily discovered in the regular routine of survey work by persons unfamiliar with local conditions. It is, therefore, well to make sure that there is ample local representation on the survey staff.

Another important reason for having local people on the survey staff is that through a survey contacts with industry and with business men are made that have value for the future development of industrial education in the community. A program of industrial education will grow in proportion to the cooperation and mutual understanding that exists between school supervisors and administrators, and people in industry. Contacts that are made should be utilized. Local directors, supervisors, and trade and related subjects teachers ought to have both field and statistical survey work to do. Such contacts are a definite source of help to the persons engaged in industrial education. It gives an added opportunity for checking up school practice with industrial needs and practices.

A Balanced Survey Staff.—A balanced survey staff is one that combines workers having backgrounds of experience and training that supplement each other in the matter of collecting facts, interpreting them, and making the necessary recommendations on the basis of the local requirements. In the larger surveys such a staff may contain representatives of: (1) the local school system; (2) the county, state or federal departments concerned; (3) the trade or industrial interests involved. A well-

balanced survey staff will have working with it in advisory and promotional capacities various committees of tradesmen, business men, parents and publicity men.

It is an easy matter to make a one-sided survey—one that emphasizes one form of instruction without considering the problem in the light of its relative value and place in a whole program of public education. The survey staff should be representative enough and broad enough in its vision to see the necessity of determining relative values.

The Local Self Survey.—There are distinct advantages in organizing a survey as a self-survey. Such a plan is likely to get maximum cooperation. It is looked upon as a development from within the community—not something wished upon it from without by perhaps a small group not really representing local desires in that particular respect.

The technique of trade or industrial education surveys is now so well known through publication of many survey reports and through training courses conducted at teacher-training institutions that it is reasonable to say that most industrial education surveys (and general education surveys too) should be organized on a self-survey basis. This does not preclude calling in outside assistance.

Preliminary Arrangements.—Before approval is sought from a local board of education on the part of the superintendent of schools or his representative it is advisable to do considerable preliminary planning to find out the probable scope and nature of the survey, and to outline, in a tentative way at least, the form of survey organization that is likely to best suit the requirements.

The various state departments of education or the teacher-training institutions have persons on their staffs that should be familiar with the special requirements for industrial education surveys and, since it is probable that the program of training that it is hoped will grow out of the survey report must conform to the minimum qualifications prescribed in the state plan for vocational education, if special subsidy is desired in conformity with state and federal vocational education legis-

lation, it is likely to prove desirable to have a preliminary conference with one or more members of the state department of public instruction or teacher-training institution that will settle questionable points.

THE SURVEY STAFF

A General Steering Committee.—If a survey is to be rather extensive in scope, as for example a survey of vocational and practical arts education on a city-wide basis, then it may be well to have not only a director of the survey but also a general steering committee. This committee will determine upon matters of general policy that are involved; it will approve the general plan and the means and methods that are to be employed; and it will be responsible for the selection of the director of the survey and the staff. It will also, in cooperation with advisory committees, pass upon all recommendations that are to be included in the survey report.

If a general steering committee of three is desired, it may well consist of:

1. A member of the local board of education.
2. The superintendent of schools.
3. A member of the state department of public instruction having duties in the field of vocational education, or a representative of a vocational teacher-training institution.

Another suggestion is to appoint on the general steering committee, in addition to those mentioned, someone representing the vocational interests of the community and to make one of the four ex-officio chairman of the committee.

The Director.—Someone needs to give more attention and time to organizing the survey, and following it through to its conclusion than can be given by the general steering committee. It is consequently common practice to have a director of the survey.

The director should know how to plan the survey so that there will be a minimum of lost motion and a maximum of

results. To begin with, he should, in cooperation with the steering committee, select the survey staff and advisory committees. These will be discussed under their appropriate headings.

It should be the duty of the director to call meetings of the survey staff from time to time as circumstances warrant in order to outline the work to be done, to discuss ways and means of doing the field work, to standardize, where it is desirable, the forms of inquiry and the methods of reporting results, to see to it that the facts found are properly analyzed and evaluated, and generally to produce a well-balanced and effective survey report.

The Staff Organization.—The size and nature of the survey staff will, of course, vary in accordance with the nature of the work to be undertaken. In a fairly inclusive survey involving several types of activities in industrial communities of approximately 25,000 or more population, the staff organization for each type of vocational education, that is, industrial, home economics, etc., may consist of a chairman, a secretary, and from two or three to twenty members. A large section staff for industrial education may include:

1. Representative employers in various industries.
2. Representative employees in various industries.
3. Trade and related subjects teachers.
4. The Chamber of Commerce, Rotary, Kiwanis, Lions clubs, etc.
5. Trade councils.
6. Personnel and educational directors from industry.
7. Contractors' and builders' exchange.
8. Other key people interested in industrial education.

Either the local supervisor or director of the kind of vocational education under consideration or some other qualified person, such as a vocational teacher trainer or a state supervisor may serve as chairman of such sections. If anyone other than the local supervisor or director is made chairman, the local supervisor or his representative, such as a trade teacher, should

act as chairman in order that the supervisor may be fully informed of not only the printed findings, but also in regard to those things that, for various reasons, are not made public.

In a sectional staff organization as indicated it will not be feasible to have all members do active field work. Some are placed upon the committee primarily for the indirect support that they will give, and for advisory purposes. The actual field work may be done largely by representatives of the local schools —men in industry will help, but usually they should not be counted upon to do field work except within their own organization or plant. In actual practice, then, a survey staff committee may have both working and advisory responsibilities.

Meeting the Staff.—The initial meeting of the entire staff may be called after preliminary conferences have been held, and after the executive director has been appointed. The superintendent of schools should act as chairman. The members of the general steering committee may be called upon to speak briefly as also the director. The latter, if the time permits, should give each chairman of a sectional group the opportunity to speak. In any event the chairman should be introduced at the general meeting.

Immediately following the initial general meeting organization meetings may be held for the various sections. If the chairmen can at that time place in the hands of the sectional groups survey forms, assignment of territory, and directions as to procedure, so much the better. These must have been developed or adapted for local use through preliminary conferences of the director with section chairmen so that there will be uniformity of method and of treatment wherever desirable.

General Style of Report.—Much unnecessary work can be eliminated by having at the outset specific directions governing the preparation of written reports. Unless this is foreseen some reports will be prepared single-spaced, others double-spaced, some on one kind or size of paper, and some on other. Some will use one width of margin, and others a different one; some will be indented one way, others differently; some will abbrevi-

ate a word, such as "kilowatt-hour" "k.w.h.," others "K.W.H.," and someone else K.W.hr. In fact the same person may not be consistent in his own writings unless the matter is specifically mentioned beforehand. Of course all of these things can be left for the editor to fix up, but it is a case of prevention being easier than the cure.

If photographs and graphs are to be used, the director should explain just how they are to be placed in the original manuscript, and how they are to be captioned. It is a good plan to arrange all photographs and charts on separate pages from the manuscript, so that they can be separated and be used by electrotypers without destroying the continuity of the written manuscript. The pages containing photographs or diagrams can be given a decimal system of notation. For example, if two photographs are to go between pages 12 and 13 of the original manuscript, they can be numbered 12.1 and 12.2 respectively. In addition to this it is well to indicate just where in the manuscript the cut is to appear, and its size. The printer may need to modify such an arrangement somewhat but it will give him a clue as to where the author of the manuscript thinks the illustrations may appear to best advantage.

In typing the manuscript some one system of notation, such as the following, should be used for divisions and subdivisions:

I. .....
A. .....
1. .....
2. .....
a. .....
b. .....
B. .....
II. .....

The number of carbon copies to be made of the original report should be determined beforehand. Since it may not be feasible to get more than one copy of certain photographs or charts, blank pages giving the captions of the illustrations may be inserted in the carbon copies.

The practice as regards captions should also be discussed

before the report is written. Directions such as the following may be given:

Main captions, such as main section headings should be centered on the page, and written in caps.

Main topic headings should likewise be centered but are to be written in caps and lower case letters.

Sub-topics should begin at the side, in upper and lower case letters, and the paragraph will follow on the same line.

The Scope and Purpose of the Survey.—It is important that members of the survey staff shall know at the outset the limitations that govern the survey. They should know how extensive and how intensive their studies should be made; they should know the approximate time allotment for the work, and the probable number of pages of a given size that they can count upon for their particular section of the survey report. Furthermore the policy concerning illustrations (how many, the maximum size, their nature and who is to prepare them) should be understood. If such matters as these are not anticipated the staff may carefully prepare five times as much material as is actually wanted in certain fields and not enough in others.

It is desirable also that the survey staff shall be clearly informed at the outset concerning the real aim of the survey. The field work, statistical treatment and all other phases of the work can then be harmonized with objectives to be achieved. For example, if the chief purpose of the survey is to make a job analysis study of a single industry as was made by Harry Bradley Smith in his survey and analysis of the pottery industry,[1] the entire approach, method of procedure and form of report are purposely shaped in the direction of meeting the purposes which were stated as follows:

1. Using the information for redistributing the production jobs among departments or between foremen and sub-foremen.

2. Distributing bulletins to master potters who have apprentices or helpers.

[1] Federal Board for Vocational Education. "A Survey and Analysis of the Pottery Industry," Bulletin 67, 1921.

3. The employer may form teacher-training classes in the plant where foremen and master workmen in the various departments are trained to use the subject matter in the bulletin.

4. Foremen may use the bulletin as a handbook in giving instruction on the job.

5. Supply workman with a description of his job.

6. Show the apprentice what he needs to know.

Other surveys of individual industries have more recently been made by George A. McGarvey, agent, Federal Board for Vocational Education, Washington, D. C. These include analyses of the following industries: (a) bricklaying; (b) terra-cotta; (c) granite cutters; (d) marble cutters.[2]

If, on the other hand, the survey is to determine the training needs of a number of industries, to establish good working relations between them and the public schools, and to make recommendations concerning the types of industrial education that are most likely to work out to best advantage with various groups of workers, then the survey should involve a different approach, different methods, and a different technique—one illustrated by surveys made at Minneapolis in 1916 and Indianapolis in 1917, or on a less extensive scale at Reading, Pennsylvania, in 1925, and at Niagara Falls, New York, in 1924. In the latter case the printed report took the form of a bulletin describing the cooperative apprentice training plan.[3]

Type Studies.—The comprehensive surveys such as the one conducted in New York City, in 1918; the ones undertaken by the National Society for the Promotion of Industrial Education in cooperation with other agencies in such cities as Richmond, Va., Minneapolis, and Indianapolis have presented much detailed data that has a bearing in other places. Certain types of trade or industrial employment were studied and it is not necessary to repeat those detailed investigations elsewhere. To be sure, conditions of employment in any given trade or calling

[2] See Bulletins 95 and 106 issued by the Federal Board for Vocational Education.

[3] University of the State of New York. Bulletin 797, 1924, "Cooperative Apprentice Training in the Building Trades at Niagara Falls, New York."

are likely to vary not only from town to town, but may vary within the same city. But the nature and extent of a person's trade skill and knowledge required in a given industry are fairly constant, and once determined need not continue to be the source of repeated inquiry.

The Small Town Survey.—The preceding paragraphs deal primarily with industrial education surveys for larger cities—those involving the cooperative effort of a relatively large survey staff. Many of the suggestions brought out apply with equal force to any survey—particularly to any industrial education survey. But the larger cities are no more in need of special survey service than are the smaller cities—meaning by that cities from approximately 10,000 population to 100,000 population.

In a city of 10,000 population the industrial education survey may have to be a one-man affair in the sense that one man does practically all of the work involved. That man is probably the director of industrial education—a teaching director or one who teaches a part or even most of the time in addition to being responsible for the immediate supervision and administration of the local program of industrial education. Granting all that has been said about the desirability of having surveys conducted by men of experience, by persons whose tenure of office or position will not be affected by the recommendations made, and readily granting the desirability of having a larger survey staff, does it necessarily follow that a so-called "one-man" survey is unreliable? Cannot the director just mentioned acquaint himself with the necessary procedure to be followed? Can he not get the advice of persons with survey experience? Can he not personally get in touch with the key people in his relatively small community? Are the conclusions that he draws the result of his own experience and reflective thinking or may they not represent a consensus of opinion—those of the leaders of his community plus those of outside advisors, plus his own? Is accurate and scientific procedure guaranteed by mere numbers and by composite opinion or may a lone scientist accomplish greater things than a large group of persons less careful and

systematic in their work? If that is true of men in the physical sciences why may it not hold in survey technique? Is it furthermore not possible to submit the results of the field work and the plans and recommendations that grow out of it to competent persons in order that they may be checked for accuracy, soundness of judgment, and practicability?

Case Studies.—An industrial education survey is to be regarded as a case study of the particular elements involved as manifested in a given community. The investigator must approach the problem without prejudice or bias and must diagnose the case on the basis of existing conditions and future trends.

Objective evidence is always desirable. It is also desirable to analyze our complex industrial education problems into their specific and component elements, but it should also be borne in mind that the greatest values from the survey will come, not so much from statistical treatment of objective data—desirable as that is—but from the personal relationships that are established between school men and those in industry; from the "goodwill" that the survey should develop; from public support gained through publicity and from working together for the common good; and from the trade understandings and agreements that should normally grow out of such surveys.

Being a case study the primary emphasis must be upon the diagnosis of the particular local situation. This is of vital importance because all too often the effort is made to generalize where that should not be done. But diagnosis involves more than merely collecting facts—of making an inventory of conditions. That is only one of the initial steps. The more difficult thing follows logically, namely the interpretation of the facts found, and specific, clear-cut recommendations for action that is needed.

Being essentially a case study an industrial education survey should make use of all comparisons that are available, such as comparisons with studies made in other cities in similar trade or industrial occupations. But there is a distinct limit to the validity of many such comparisons due to the difference in local settings. The method of comparison has been used much less

in industrial education surveys than in general education surveys.

THE GENERAL OUTLINE

Whether the survey is to be extensive or not there are certain main points that should ordinarily receive attention. It is, of course, neither feasible nor desirable to have all industrial education surveys cast in the same mold, but the following points should usually have a place in the report.

1. Purpose.—At the outset of the report it is desirable to acquaint the reader with the purposes of the investigation, of why the study is being undertaken and what it hopes to demonstrate. As has already been mentioned it is necessary, first of all, that the survey staff should know what the study is to try to accomplish, but that is not sufficient—the persons who are to be reached through the report should also be told what it is all about.

2. Definition of Problem.—After the general problem has been stated it is necessary to define it. To define a problem means to state it with accuracy, to determine it precisely, and to fix the limits of the problem. In defining the problem it should be delimited and made specific.

The problem or problems should as a rule be stated in the form of: (1) a question or several questions; (2) a declarative statement or proposition, or several such statements.

3. Scope.—The scope of the survey or study can be stated under "Definitions of the Problem" or it may be given a separate heading with the thought that the latter practice will contribute to clearness of understanding. A detailed statement of the scope of the inquiry is desirable.

4. Methods.—The validity of a survey report can be judged to a certain extent by a description of the methods employed in conducting the survey. There should, therefore, be careful explanations of the various techniques that were employed. These may include procedures such as: (a) Analysis; (b) interview; (c) conference; (d) questionnaire; (e) observation and (f) testing.

5. Sources of Data.—One of the first sources of data to look for are the official records that have a bearing upon the survey. These may be found in: (a) Federal census reports; (b) state reports made by such departments or bureaus of the state government as the department of internal affairs; (c) reports of labor organizations; (d) reports of manufacturers associations; reports of the state department of public instruction, and (e) private and quasi-private studies.

Most important of all are the personal observations, interviews and conferences held "on the job." The best printed data available may not be worth much for the specific purposes of the survey due to a number of possible factors such as the way the data were originally secured, or the time that has elapsed since it was gathered.

6. Analysis of Needs.—This analysis can often be best made on the basis of trade groups or subdivisions of them, such as plumbers, electricians, plasterers, and machinist and automechanics, since these various groups will require training services each of which is distinct and separate from the others. The method of approach, however, may be to study one plant or establishment at a time, using a form such as "Voc. S. 2" and then regrouping the data so that they will show the total numbers of apprentices, helpers, and journeymen in any given trade to be found in the city.

7. What the Schools Are Doing.—Before one is ready to state what the schools should do to meet the industrial education needs revealed through an analysis of the industrial situation it is often advisable to see what the schools—both public and private, are already doing to meet the requirements of industry. Sometimes it is quite obvious that little is being done in either pre-vocational or vocational education. Perhaps that very fact needs to be brought to public attention. In other instances a commendable program is already under way; that too should be made more widely known through the survey report.

8. A Plan of Action.—This plan should be made as clear as possible so that it may be understood by the general public.

It may take the form of a series of recommendations for things to be done such as:

1. Establishment of trade advisory committees in the various trades and callings to be served by the schools.
2. Listing, by trades, of the types of industrial education to be developed.
3. Suggestions concerning courses of study.
4. Suggestions on housing and equipment.
5. Recommendations as to the qualifications and tenure of teachers.
6. How better coordination is to be brought about between: (a) general and vocational education, and (b) vocational school practice and industrial needs.

There are advantages in setting forth the recommendations in a separate division or chapter of the survey report. Such a practice, for example, enables those who, for some reason or other, do not desire to study the entire report to get the recommendations in compact form.

Survey Forms.—In order to get a bird's-eye view of the industrial character of a community, Form Voc. S.1 may be used.

Data for a Particular Industry.—In the effort to secure survey data from a particular industry it is well to see to it that the plant superintendent or whoever is to give the information desired is thoroughly informed concerning the whole matter. By way of approach it may be well to discuss the more general aspects of industrial education, such as the service it may render to his plant or establishment. Sometimes an industrial executive will take an indifferent or even hostile position until he is correctly informed on certain matters. It is not always easy to secure data on the number of persons employed. As a matter of fact the state laws may require only confidential reports on occupational statistics, where there are, let us say, less than three concerns of a kind in the community. This is

INDUSTRIAL EDUCATION SURVEY

(Form Voc. S.1)

List of Industrial Establishments by Trade Groups

City_____ Date_____

I. *Metal Trades*

(List by subdivisions)

Name of firm	Location	Telephone Number	Person to See
1.			
2.			
3.			
4.			
Etc.			

II. *Building Trades*

(List by subdivisions)

Name of firm	Location	Telephone Number	Person to See
1.			
2.			
3.			
4.			
Etc.			

III. *Printing and Allied Trades*

(List by subdivisions)

Name of Firm	Location	Telephone Number	Person to See
1.			
2.			
3.			
Etc.			

IV. *Other Trades*

(List by subdivisions)

Name of Firm	Location	Telephone Number	Person to See
1.			
2.			
3.			
Etc.			

done to protect them from giving out public information that may be used by a competitor.

The interview method is much better than the correspondence method of securing even such apparently harmless information as the number of journeymen or apprentices employed in given lines of work. Form Voc. S.2 may be suggestive.

It will be noticed that Form Voc. S.2 does not ask "How many journeymen, helpers, and apprentices do you have now?"

INDUSTRIAL EDUCATION SURVEY

(Form Voc. S.2)

Data for a particular plant or establishment

Name of City _____ Date _____ Reported by _____

Name of firm, establishment or employer _____

Address _____ Telephone _____

Trades or occupations for which training may be given

Name of trade or occupation (Payroll job)	Average number employed			Length of learning period for		Approximate number new workers each year	
	Journeymen	Helpers	Apprentices	Helpers	Apprentices	Helpers	Apprentices
1.							
2.							
3.							
Etc.							

It asks for the average number, or the number employed during normal conditions. This is more valuable than to get an exact figure that might represent an abnormal situation.

The length of the learning or training period for helpers is usually a variable quantity even within the same plant, but it is of interest and value to know whether or not it is approximately two weeks, two months, two years, etc., as this will help to decide whether or not specific school training should be organized for the occupation or calling.

The approximate number of new workers that may be needed per year is usually a matter of speculation, depending upon a number of variable factors, and yet it should be possible to give

an estimate that will be helpful in planning a trade training program for a community.

Data for a particular plant or establishment should be treated confidentially if it is so desired.

INDUSTRIAL EDUCATION SURVEY

(Form Voc. S.3)

Training Possibilities

Name of City _____ Date _____ Reported by _____

Name of firm, establishment, or employer _____

Address _____ Telephone _____

1. *Evening Trade Classes.* Will you encourage your employees to take up instruction that is supplemental to their daily employment (such courses as blue-print reading, trade mathematics, drafting and shop-practice) if evening classes are organized for that purpose? _____

2. *Pre-employment Training.* If practical vocational training under competent trade teachers is given in the day school will you give credit for such training upon apprenticeship? _____
How much? (Hour for hour?) _____

3. *Part-Time Training.* Are you interested in part-time training of apprentices, or helpers, such as (a) Four (or some other suitable number) hours per week during working hours? (As for example on Saturday mornings) _____
(b) Slack-Season Instruction? _____
(c) Part-time cooperative training (about half time in school and half time in industry. The practical training given in industry and related and general education in school)? _____

4. *Advisory Service.* If you are interested in cooperating relative to one or more forms of trade training will you assist the schools in an advisory capacity to plan courses of study and shop equipment? _____

A form on training possibilities such as Form Voc. S.3 has a two-fold purpose—it serves as a means of getting certain desired information and it also serves to promote industrial education by calling different types of training to the attention of persons who may be interested.

Giving credit toward the completion of an apprenticeship for pre-employment training given in school presents a number

of difficulties at times. Practices vary a good deal. It seems reasonable to request that an hour for hour credit should be given for school training of approved character. Certainly a person ought to get as much out of an hour's training in a school shop when special attention is given at all times to teaching as can be obtained by working an hour as an apprentice in shops where apprentices are not under constant instruction and where their work at times is repetitive beyond the extent needed.

INDUSTRIAL EDUCATION SURVEY

(Form Voc. S.4)

Kinds of training and hours per week desired

Name of City _____ Date _____ Reported by _____

Names of Trades or Occupations	Kind of Instruction Desired and Length of Training					
	Evening School		Part-Time School		All-Day School	
	Shop hours per week	Related hours per week	Shop hours per week	Related hours per week	Shop hours per week	Related hours per week
1.						
2.						
3.						
Etc.						

Form Voc. S.4 as well as Form Voc. S.3 ought to be discussed in an interview between a member of the survey staff and the firm, establishment, or employer concerned in order to get the best results. The purpose as well as the content of the forms must be clearly understood. Most persons in industry

have given but little attention to a careful consideration of what particular forms of industrial training are best suited to various groups of persons to be trained so that these matters should be discussed before they are made a matter of record.

Financing Surveys.—The more extensive vocational education surveys, such as those conducted under the auspices of the National Society for the Promotion of Industrial Education in Richmond, Virginia, Minneapolis and Indianapolis, required a considerable outlay of money and service. Many surveys have been undertaken on the basis of having a few special workers paid out of local or other funds specifically set aside for the survey whereas the bulk of the work would be done by persons otherwise paid, who would be made available for the purpose. In addition to this a great deal of free service may be involved—some given by teachers in service, some by persons in industry, some by social workers perhaps, some by other public-spirited persons who are so situated as to be able to be of help.

The cost of conducting a survey and of making its findings available may be materially reduced if the report can be printed in a school print-shop. It is furthermore not infrequently possible for a community to conduct a trade and industrial education survey without a cash outlay on the part of the local board of education. The state department of public instruction, a teacher-training institution, an educational foundation, a manufacturer's association or other groups may see their way clear to finance the enterprise beyond the point of the field, clerical, statistical, press, printing and consulting service that will not involve additional direct expense.

Treatment of Findings.—It will be well to keep in mind that a survey report is nearly always intended for laymen as well as for those in the profession of teaching; it is intended for the general public as well as for those employed in educational work. It is therefore advisable to give a treatment to the report that will appeal to all groups concerned. In order to make the report readable and interesting, graphs and photographic illustrations should be frequently used. Important facts, significant

relationship and central tendencies should be shown graphically and pictorially as well as by means of descriptive and statistical treatments. The effort should also be made to maintain relative values throughout the report as regards content, space, and method of treatment.

It may not be out of place to point out that while objective data and statistical treatment are necessary and desirable yet there is danger that too great a claim may be made for the reliability of the findings.

If there are teachers of art, of printing, and of mechanical drawing, they will prove of valuable assistance in the matter of graphical and pictorial illustration, and perhaps the printing department is sufficiently well equipped to print the report. Sometimes portions of the report can be sent out to be set up on a linotype machine if one is not available, thus saving much time and effort for the school print-shop. Some attractive and effective survey reports of considerable size have been printed in school print-shops.

In addition to the printed page, lantern slides may be used to good effect in order to illustrate the high spots of the survey report. An illustrated talk given during the progress of the survey or shortly thereafter is an effective means of shaping public opinion. Colored slides are much more effective than plain ones.

Another plan of informing the public is through the use of photographs and charts that are properly mounted and that are amplified where necessary by explanatory statements. If such an exhibit is combined with objective displays of work that is being done in the schools, it will always attract attention. The leading stores in a city will usually be glad to give space for any school exhibit that is artistically arranged.

The plan of summarizing findings and conclusions is a good one. Such summaries may be made on the basis of each major and subdivision of the report, such as: (1) all-day schools; (2) evening schools; (3) part-time schools; etc., for they can be grouped on the basis of the survey report considered as a unit. Both plans are used. If the latter plan is adopted it will prob-

ably be advisable to use subdivisions in the report of conclusions and recommendations corresponding to the divisions used in the survey report. This will be of special convenience to those who wish to read only certain sections of the report together with the corresponding recommendations.

An index by subject matter, or an alphabetical index or both are worthwhile if the report is fairly comprehensive.

Value of Survey Experience.—From a professional standpoint there are few if any experiences that will be of greater value to a trade or a related subjects teacher than those that grow out of participation in surveys, involving contact with the particular trade or occupation to which his instruction relates. Development in the field of industry is always ahead of schoolroom and school-shop practice. Survey work offers the opportunity to make first-hand contacts with workmen, foremen, supervisors and administrators in industry; it provides a chance to make contacts with industry that should prove mutually helpful and that should help to keep school instruction practical, worthwhile, and in step with the latest developments in the trade.

But survey experience does more than that. It not only helps one to evaluate his own teaching, and to make it better, but it also gives one a better sense of proportion—of the relative significance of things; it helps to develop a cooperative attitude and it assists in creating a sympathetic appreciation of what others are doing.

Participation in an industrial education survey means extra work for all concerned; it may mean a good many hours of overtime but no one has ever been known to be selected as a plant superintendent who was constantly watching for the whistle to blow. The time and effort spent upon survey work may be checked off as training for better service.

Making Use of Facts Found.—The real acid test of the value of a study or survey is to be found in the results that grow out of it. These results may be direct and indirect; they may be rather immediate or they may be delayed in their realization. Not infrequently desirable changes or modifications in

procedure are made while the study is in progress and before the report is completed. These really are an outgrowth of the survey though they may appear to be independent of it.

A number of surveys have been undertaken that, on the basis of the visible results obtained, must be classed as undertakings of doubtful value. They do not seem to have produced results commensurate with the time, effort, and funds expended. One can conclude from this that care is to be exercised in determining the character and scope of surveys, and above all that the whole organization and administration of the survey work should be determined by what is needed and what can actually be accomplished in the way of modification and expansion of the present program.

In order to bring results the survey staff should always be fair, considerate, and courteous, and the keynote of the report should be constructively helpful rather than destructively critical. The report should in every way inspire confidence in its conclusions. Conservative and careful statements are more effective than extreme and radical ones. And finally, the survey should lead to closer cooperation between the schools, industry, and the community at large. The personal contacts that have been made and the various forms of molding public opinion that have been mentioned all contribute toward that end.

The facts found in a survey need to be most carefully interpreted in the light of conditions that have existed in the past, that now exist, and that are likely to arise in the future. Frequently conditions found are not normal but only temporary. For example, an industry may have seasonal employment or it may, due to causes beyond its control, be temporarily running at less than normal capacity. Again, another industry may, due to changes in inventions or discoveries, be forced into the critical problem of having to either reorganize or to close its doors. All such factors need careful study on the part of those who are planning programs of industrial arts and vocational industrial education that will adequately serve the youth, and mature workers in the community.

Summary.—Industrial education surveys, like those in the field of general education have been undertaken under all sorts of conditions, with various primary motives, and with varying success. Out of the experiences of the past should come a better understanding of both the limitations and the advantages of various methods of approach, of the various types of survey technique, and of the practical results that can reasonably be expected to come from the efforts put forth.

We are living in a fact-gathering age, one that is definitely committed to placing all education on a more scientific basis. We need surveys and analyses for a number of reasons among them being: To give trade teachers and directors more recent, more accurate, and more detailed information concerning present-day requirements and tomorrow's trends in industry. Another reason is to have the survey serve as a means of educating all persons concerned—the consumer, the producer, and the public with regard to special educational requirements that need to be met in the interest of social and economic welfare. There is a logical place for various sorts of surveys as for instance (a) the intensive study of a single industry; (b) the comprehensive survey; (c) the small one-man-conducted survey; and (d) the more or less informal "overviews" analyses and studies. Much can be learned by studying survey reports and through discussion with those who have had survey experience.

QUESTIONS AND PROBLEMS

1. Discuss the reliability of occupational data as given in the United States census reports.

2. How is the data on occupations and manufactures secured that is issued by your state government through such a bureau as the Bureau of Statistics?

3. What is the definition of "apprentice" as used by (a) labor, and (b) employers in their statistics concerning the status and the number of persons employed.

4. Compare the probable reliability of available occupational statistics in such industries as: (a) the building trades; (b) the printing trades; (c) the metal trades; and (d) the automotive repair trade.

5. Suggest ways of securing cooperation through an interview.

6. Is it desirable to appeal to the personal pride of the person you desire to interview?

7. Give suggestions for making appointments with persons to be seen.

8. Discuss the practice of arguing as it related to interview technique.

9. If a questionnaire is to be used how will the reliability of results be affected by the per cent of returns?

10. Discuss "pre-tabulating replies secured through the questionnaire method."

11. Should graphs be drawn before or after the descriptive material has been written? Why?

12. How should tables and graphs be numbered?

13. Where is it customary to place the captions of tables and graphs?

14. What is the correct reading position for graphs, drawings, and photographs to be set lengthwise of the printed page?

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CHAPTER XVIII

HOUSING AND EQUIPMENT

The General Problem.—Among the important factors that help or hinder, as the case may be, the development of industrial education are the housing facilities; the shop and laboratory layouts and the equipment that is installed therein. Specific mention of these factors is made in the national vocational education act and in state plans for vocational education.

Much could be written about general schoolhouse requirements—much has already been written in that field. The general problem of determining the number of pupils and adults to be accommodated, of selecting the architect, of determining the schedule of rooms and shops, of selecting the site, of preparing plans and specifications, of securing approval of plans, of securing bids and letting contracts—all these matters are primarily matters for school administrators. There are definite contributions, however, that the shop teacher, the supervisor and the director of industrial education can make better than anyone else.

Whose Job Is It?—Schoolhouse architecture is fast approaching that degree of standardization when there will be rather general agreement on such matters as size of classrooms, amount of window area, height of ceilings, heating, ventilation, and ordinary classroom and laboratory equipment. But when it comes to determining what kinds of school shops shall be installed, their area, proportion, and their special requirements, then the architect and the superintendent will want the advice of persons capable of giving that information. When it comes to shop layout and equipment who is to be responsible for that? The question is sometimes asked, particularly by skilled and experienced shop teachers, who happen to be employed where they might have contributed from their first-hand experience

toward the solution of problems of shop layout, but were not asked to do so: "Whose job is it to determine the layout of equipment and to determine what equipment, tools and supplies shall be ordered? Is it the job of the superintendent, the principal, the director of industrial education or is it the teacher's job? The one person most competent to do this in a given situation might be any one of the persons mentioned with the probability that the teacher is best qualified to select and arrange the equipment in his shop, and that the director comes next in order of relative competence. Of course there are exceptions to this. The director, or the supervisor in the case of the large cities, may have spent considerable time in consulting with teachers, mechanics, manufacturers and dealers regarding the relative advantages and disadvantages of various materials, tools and equipment; he may have had unusual opportunity to study various kinds of equipment in service, both in the industries and under school conditions, and he may even devote the major part or all of his time to the study of equipment for school shops. Now take the opposite case of the expert tradesman fresh from a large production plant specializing in a product of unusual size. In spite of all we say about equipping school shops like those in industry we must recognize the limitations and the conditions as they will exist in the school shop and the expert craftsman, while he knows what is the proper equipment for, let us say, heavy-duty production work, he may still be at a loss to settle the all important question: *"Is the equipment adequate for school purposes?"*

We should like to go on record as strongly favoring, under most conditions, the proposition that *shop layout and equipment should be a cooperative affair* between the teacher, supervisor or director, the trade advisory committee, and others who may have a contribution to make. It is therefore, as we see it, not so much a question of finding out who is the one person best informed and letting him do the work as it is a matter of getting various persons to contribute toward the solution of the problem.

State Requirements.—Special reimbursements from either state or federal funds are made to school districts or to schools, depending upon the state plan for vocational education, in several different ways, but whether it be in the form of reimbursement upon teacher's salaries, on the basis of a percentage of operating cost, or on any other basis the state is interested in assuring itself that the shopwork is taught with adequate equipment. For this, and for other reasons it is well to make sure that the equipment to be ordered meets the requirements of the state office that is charged by law with enforcing the provisions of the state plan for vocational education. It is appreciated that time is an important element; that there is the desire to "cut corners"; that we wish to reduce "red tape" to a minimum, but experience will show, we believe, that equipping shops is more than a one-man job, and that it pays to give it the attention that its importance and difficulties demand.

Even where there are no specific requirements set up by the state office it is often—perhaps always—well at least to keep that office informed concerning plans and developments. We can take for granted that the larger cities may have in their employ experts in shop planning; we know that there is no desire on the part of state offices to do work, such as making out equipment lists, that the school or school district can do itself in a satisfactory manner, but it is a matter of record that not a few school districts could have spent money for equipment more wisely had they consulted, among others, the state department of public instruction.

Safety Regulations.—Everyone will agree that school shops should be equipped so that they will be as safe as possible. Poorly guarded power machinery should under no circumstances be tolerated. Whatever machine tools are used should be selected, in part, for their safety. It is therefore well to include in all specifications for tools and machines the clause that they must comply with all of the regulations of the state department of labor and industry or whatever department or board enforces the safety rules and regulations as they pertain to work in industry in any given state.

The layout of a shop can contribute much toward safety as every experienced teacher knows. If equipment has to be crowded, guard rails, screens, and other devices may be used to advantage. Similarly, the nature of the equipment will have much to do with reducing accident and other hazards to a minimum.

Legal Aspects.—Anyone responsible for ordering supplies and equipment should be familiar with the law relating to such procedure. The following extracts taken from the School Laws of Pennsylvania will help to make this point clear:

> *Section* 706.—"School supplies shall be divided into two classes. The first class shall include school desks, chairs, typewriters, and school apparatus. The second class shall include maps, globes, and all other supplies, except textbooks necessary for school use, not included in the first class. . . ."
>
> *Section* 707.—"When it is deemed necessary to purchase desks and other supplies of the first class, costing one hundred dollars ($100) or more, the board of school directors shall solicit sealed quotations from two or more firms, manufacturers, or dealers. . . ."

Personal Liability.—It is not a valid excuse to plead ignorance of the law. Such provisions as those just quoted were passed for very good reasons. When public funds are spent in ways contrary to law the person or persons involved, even though he or they may have had the best and most worthy of intentions, lay themselves liable, individually or collectively to legal action, and in Pennsylvania they may be surcharged with the amounts involved. This may be illustrated as follows: Let us assume that equipment, in excess of the amounts not requiring bids, is purchased without bids. A dissatisfied taxpayer can bring suit against the person or persons responsible for the illegal expenditure of the public school funds involved, and if the claim is sustained the person or persons responsible must make good, out of his or their personal fortunes, the amount misappropriated and in addition face the possibility of jail sentence. The shop teacher may figure, since school equipment is

purchased through the secretary of the board of education, through a purchasing agent, or through the superintendent's office that he, the teacher, need not concern himself about these legal matters. Would it not be well if the teacher would find out what is the proper procedure in the matter and then check up to determine that the right thing is done? May it not happen that the secretary of the board of education and the superintendent himself may not happen to know the conditions governing the purchase of equipment and supplies as laid down in the school laws of the state?

Anticipating Needs.—It is very desirable to have shop layouts made and agreed upon before the contract for the building that will house them has been let. The different shops may need different kinds of floor coverings. For instance, concrete may be satisfactory in the automobile shop whereas a hard maple floor laid over concrete may suit the machine shop instructor better. When heavy machine tools are to be installed, especially where vibration should be kept at a minimum, it is desirable to have specially constructed concrete foundations of just the right size and kind to take care of a given machine.

Various outlets and conduits may be needed. If so they can be best provided for when the building is being erected. Extra wide doors, supply and exhaust pipes, special electric, gas, water and heating fixtures, etc. can all be placed to best advantage at the time of erection.

If the local supply of a given material such as lumber is not satisfactory, or if money can be saved by installing a dry-kiln that too and many other features must be anticipated. There is therefore ample reason for planning ahead.

All too often shop equipment is purchased without sufficient preliminary study. It is the exception rather than the rule for a school district erecting its first industrial school to hire an expert director before the shops are built in order that he may, with the assistance of trade advisory committees and others, see to it that the special needs in the various shops and laboratories are met when the building is erected.

It is a good practice for shop teachers, supervisors and di-

rectors to keep a record of tools, materials, equipment, special devices, arrangements, and so forth that have a bearing upon industrial education. Cost data and records of actual supplies used in similar situations are valuable in planning for the year ahead.

I. GENERAL FACTORS

1. Conformation to General Plan.—If the school shops are to be housed in a school building designed to accommodate other forms of vocational as well as non-vocational education the trade shops may have to conform in shape and size to the general building plan. For instance, the space allotted to a shop may correspond to that ordinarily taken by two adjoining standard size classrooms. This will not be ideal but may be the best that can be done in that case.

In some other instance the high price of real estate and shortage of housing space may necessitate planning a shop in what is admittedly cramped quarters, and this may happen even in new school building. In cities like New York, Philadelphia, Milwaukee and Los Angeles the loft type of building is used for trade schools whereas in most places school buildings are kept to two or three stories, and many favor, where space will permit, school buildings only one or two stories in height.

Shop layout is influenced much by whether or not the shops must conform to space requirements laid down for non-vocational and other units or whether they can be planned without such restrictions in the form of an annex or as a separate building. Much is to be said in favor of having shop annexes to the main building that is used for administrative classroom and other non-vocational purposes.

In the case of the annex and also the separate shop unit the noises from the shops do not disturb recitations; more freedom in planning is to be had and the cost may be reduced by using a factory type of construction for the shop units while the other part of the building may be built in accordance with prevailing standards for schools designed for general education purposes.

2. Lighting.—It is trite but true to say that lighting, both natural and artificial, should be as good as possible. School laws sometimes require the glass area of a schoolroom to be at least twenty or twenty-five per cent of the floor area. But that is only an approximate way to define adequate lighting. Obviously the windows may face any of the points of the compass; they may be shaded by nearby trees or buildings or by areaways any or all of which would reduce the amount of light.

In the classroom, light should come from the left and back; in school shops that rule does not always work out well. Since the shops are usually larger than standard classrooms it becomes more difficult to provide adequate light from one or two sides only. As a consequence we find school shops, like industrial establishments, with windows on three or four sides and perhaps with skylights thrown in for good measure.

Cross-lighting is not necessarily objectionable in the shop since the various benches, machines, and other equipment can be faced so as to get the natural light from the best direction. Shop benches should be placed so that the light comes from toward the right and the front of the worker so that his body will not throw a shadow on the bench. It is an advantage, other factors being equal, to have the class face their benches in the same direction.

The requirement for light is often one of the most important factors in placing equipment. Thus, in the print-shop, composing stands may be given better light than job presses; the machinist's bench may be placed nearer to the windows than the machine tools and drafting tables for sheet-metal layout may be given better light than the sheet-metal working machines. Another factor to be considered is relative frequency with which any given equipment is used. Assuming that two pieces of equipment have approximately similar demands as to quantity of light the one that is used more should get the better lighted location, other factors such as production order being the same.

If possible equipment should be placed so that one piece will not throw shadows upon another. From that standpoint

the tallest equipment would logically go farthest from the sources of light.

3. Artificial Lighting.—School shops like classrooms and drafting rooms should have good general artificial illumination. In addition to this the shops should have special lighting units to fit the various requirements. For instance, it is considered desirable by some to have a portable light fastened to the carriage of an engine lathe so that a clear light may at all times be thrown upon the cutting tool.

The first step in correcting faulty lighting in shops already equipped is to shade all bare lamps that are in the line of vision or at least to replace with frosted bulbs all bare lamps that the eye must face. One method of overcoming glaring lights is to raise them closer to the ceiling and place reflector shades over them so that all available light is utilized. Another method is to use opal glass shades dense enough so that the bright filament area of the lamp is not detected when looking at it.

Portable lighting fixtures are desirable upon drafting tables that are used for evening classes. They are, however, not common because of the added expense, because they are somewhat in the way when not in use, and because they provide day school pupils with just one more thing with which to "experiment."

In the larger shops it is desirable to have the general lighting units on two or more circuits so that all lights need not be used at all times when only a limited area, such as the darkest portion of the shop needs artificial light.

4. Power Circuits.—When the power requirements for a shop are definitely known in advance it is relatively easy to plan suitable circuits. But such requirements may change, or they may be subject to a layout not yet made, then what can one do? One method is to run one or more power circuits the length of the shop using flush outlet boxes in the floor at points near to where the power is likely to be used. It is best to figure power circuits heavy enough to take care of all emergencies.

5. Water.—From the standpoint of economy alone it is desirable to group washrooms and toilets. No one knows better than

does the shop teacher, however, the advantage of having a drinking fountain, and washroom fixtures right in each shop. There is such a constant need for washing hands—more so in some shops than others to be sure—that the added expense is well warranted. The most appropriate and at the same time the least expensive fixtures are of the factory type. The fixtures should be simple and as fool-proof, or rather as "experiment-proof" as possible. It is well to place the drinking fountain and wash basins where they will not, when used, interfere with ordinary lines of travel. For example, one end of the shop may be set apart for a toolroom, the instructor's office, and a washroom so arranged that the instructor can see what is going on everywhere whether he is on the shop floor or at his desk in the office. As a rule he will not want to be in the office during instruction hours but exceptions will arise as when records need to be consulted or are to be entered at the office.

6. Suggestive Floor Areas.—An examination of the actual floor areas devoted to the various types of school shops shows a wide range in area in all of the various types. On the one hand there are the cases where shops are crowded into space as small as a standard classroom unit and a half; on the other hand there are the large shops found in privately endowed trade schools, mechanics institutes and in publicly supported vocational and technical schools in large cities. Merely to state the floor area does not necessarily give a complete picture of the actual situation. For example, some of the larger shops are planned for two teachers; others use one instructor with day classes and two with evening classes; some shops have adjoining them other related units such as storage and blueprint rooms or a machine shop to supplement an auto shop; still others are complete self-contained shop units.

In Federal Board Bulletin 20, page 22, Dr. J. C. Wright gives floor areas for a number of shops and related subjects rooms based upon a study of trade and industrial schools. Another later list is given by him in John J. Donovan's "School House Architecture," page 166. The list given in Table XI is presented with the thought that it may be suggestive only,

to those interested in planning shops. The list represents the combined judgment of one of the writer's classes in shop layout and equipment. The floor areas herewith given are for one-teacher shops. It is almost as bad to make shops too large as too small as there then is the tendency to increase the size of the classes to the extent where they will be too large to handle to the best advantage.

TABLE XI. SHOWING SUGGESTIVE FLOOR AREAS FOR SHOPS

Type of Shop	Suggested Areas in Square Feet	
	Minimum	Adequate
Automobile	2,000	4,500
Cabinet	1,200	3,500
Carpentry	1,200	3,500
Drafting	1,000	2,000
Electrical	1,200	3,500
Industrial Arts, General	1,000	1,500
Industrial Arts, Unit	1,000	1,500
Interior Decorating	1,200	3,500
Machine	1,200	3,500
Pattern	1,200	3,500
Print	1,200	2,500
Sheet Metal	1,000	2,000
Trowel Trades	1,500	3,500
Welding	1,200	2,500

7. Ceiling Heights.—When the shops are to be located in a school building of the comprehensive or cosmopolitan high school type it is quite probable that the ceiling heights for the shops will have to conform to the standard set for the structure as a whole. In Pennsylvania the minimum height permitted in either classroom, laboratory or shop is twelve feet. A somewhat higher ceiling is desirable for practically all shops, and those where fumes or gases occur should have plenty of cubic space per student. Thus the automobile shop and the foundry require higher ceilings than most shops. In other instances as in electric shops where transmission poles are to be set up, in plumbing shops where it is desirable to work upon balloon frame construction extending from the ground through several stories and a roof, and in carpentry classes where large jobs are to be undertaken, it is likewise desirable to have ceiling heights of more than twelve or fourteen feet. Perhaps the shops can be so located that extra ceiling height can be provided by means of open roof-truss construction instead of having flat ceilings.

8. Floors.—Every type of floor has advantages and disadvantages. It therefore becomes a question of selecting for each shop or laboratory the type of floor that best meets the requirements for that particular shop or laboratory. It is evident that there is lack of agreement as to what constitutes the best floor covering for machine shops; there is more agreement on woodworking and electric shops, and rather general agreement on automotive and trowel trade shops. For machine, sheet-metal and other metal trades shops wood, wood block, composition and concrete are used with the major preference for wood; for wood shops, print shops, and electric shops wood floor coverings are usually held to be most desirable; for automobile, trowel trades and welding shops concrete is commonly used.

II. SPECIAL REQUIREMENTS

In addition to the general factors that have just been mentioned there are a number of special requirements that must be considered in equipping and laying out school shops. A good

way to approach the subject of special requirements is to study the layouts of numerous schools as given in reference material such as that listed at the close of this chapter. The relative advantages and disadvantages can thus be more easily studied. But in addition to this it is desirable to discuss the problems involved with persons who have had first-hand experience in teaching with given kinds of equipment arranged in various ways.

1. Toolrooms.—To illustrate the point just made, let us consider the relative merits of toolrooms and wallboards as devices for housing the general tools in a school shop. Both systems are in use in modern schools. Which is the better? This depends in no small degree upon the type of a shop in question and the kind of students in the shop. If the number and variety of the tools are not great, a wallboard or two in the shop may serve the purpose very well; if there are many tools, especially little ones that slip into the pocket easily, it is usually considered best to have a toolroom with wallboards within it, all under lock and key.

2. Finishing Room.—How large shall it be, where shall it be located, and shall it also serve as a storeroom for materials, supplies, and partially completed projects? There are not many schools that have finishing rooms used for that purpose only—unless it be some dark, unlighted, unventilated room that was originally intended for storage. Yet, how desirable it is to have a real finishing room in connection, for instance, with a cabinet shop—not merely a storeroom in which finishing is done!

Owing to the fact that recent improvement of brushing and spraying lacquers has resulted in their widespread use, it appears logical to acquaint students with their use. A spray booth is therefore a desirable feature in a school finishing room. In schools where compressed-air outfits cannot be purchased or are for any reason not feasible, small hand-sprayers may serve the purpose. Since the proper use of lacquer involves a knowledge of its special properties, this instruction should be given as an integral part of the shop training.

Special precautions should be taken for proper ventilation,

for the reduction of fire hazards and for the observance of all regulations bearing upon the health and safety of the students. Precautions need also to be taken to make the finishing room as dust-proof and as fire-resisting as possible. Sometimes dust works through door and window openings, through the floor, or through ceilings and sidewalls. Dust may also come from unclean radiators, and from air intakes. It is especially undesirable to have dust-raising machinery set near the entrance door to a finishing room.

3. Blueprint Room.—Is it desirable to have the blueprint machine, the washstand and the drying racks right in the drafting room, or is it best to have them in a separate room? In the first case they can readily be supervised by the drafting teacher; in the second instance, they cannot be quite so easily controlled though they may be in adjoining rooms. Separate rooms, with door between them, are favored in situations where the blueprint machine is in frequent use—where the science teacher, the mathematics teacher and others wish to use the machine at times when the drafting class are at work at their boards. In such a situation, if the machine were located in the drafting room it would tend to distract students from their work.

For washing blueprints, a lead-lined sink of ample size can be installed quite reasonably. It should be provided with an overflow pipe so that the sink will not run over in case someone inadvertently permits the water to run longer than is proper.

Even though an electric blueprint machine is installed it is considered good practice to instruct the class also in the use of the smaller frames to be used with sunlight or electric light, since a number of offices doing relatively little blueprinting prefer to make their own prints rather than to send them to a commercial concern to be made.

4. Benches.—There are several factors that enter into the problem of the type of shop bench to use and its location. Among them are: (1) suitable light; (2) economy of floor space; (3) cost. When funds are short it would seem to be wise first of all to purchase the necessary hand tools, second, the minimum machine tools, and then if the money runs short have the benches

built either entirely or in part by the students. As a matter of fact, building the shop benches may make an excellent shop project irrespective of whether or not the school can or cannot afford to purchase them in the open market.

One of the requirements of a good shop bench is that it is sturdy, strong, and free from vibration. The act of planing boards on a bench produces a severe strain upon the bench—one that some light benches will not stand satisfactorily. In many cases the bench must withstand heavy pounding and other shock so that it is well to make sure at the outset that the type of bench installed will measure up to the requirements. If the bench is to be used for supporting a series of machines, as for instance a battery of bench lathes, it is important that the bench should be sturdy enough to prevent perceptible vibration when all machines are in operation.

Economy of floor space can sometimes be secured by using wall benches—either continuous or shorter benches placed end to end. In other instances the best arrangement possible will call for various types of benches as for example wall benches, single benches and double benches. If there is sufficient space, single benches are as a rule preferable to double ones. Shop discipline is easier to maintain where the students have no occasion to crowd each other, or disturb each other by jolting the bench, as is sometimes possible. In certain types of shop instruction, as for instance in electrical work, the instructors sometimes prefer to have boys work in pairs, and they prefer, for that reason, to use double benches.

Sometimes the space under the benches can be used to advantage for the storage of materials. Shop benches equipped with a series of drawers are not in common use, perhaps partly because of the expense, but probably more so because of the difficulty experienced in getting students to keep them free from shavings, cotton waste, and other things—it is so easy to chuck odds and ends into a drawer.

The type of finish used on a shop bench is also to be considered. In most commercial shops no finishing material, such as linseed oil, shellac, or varnish, is used. Shellac and varnish

finishes are quite easily marred and an oil finish tends to make the bench top slippery so that work cannot be held upon it so readily as upon the unfinished bench top. For school shops some sort of a finish is often employed. Finishes have the advantage of filling the pores of the wood so that they can more easily be kept clean and sanitary. Laboratory table and bench tops are sometimes treated with special acid-resisting finishes.

As for vises they should be selected so as to stand up under abuse, for they will get the latter in school shops.

5. Cabinets.—Cabinets for the storage of materials, tools or completed projects are made of both wood and metal and are very desirable in most shops. When inflammable material is to be stored in them, or when a fire-resisting, long-lasting cabinet is desired, the metal cabinet is to be preferred. Except in the case of exhibition cabinets, the doors are usually paneled. Neatness, compactness and convenience of arrangement of the contents should be sought. The appearance of storage cabinets, bins, drawers, etc., gives an index of the instructor's carefulness and organizing skill. It is well never to permit cabinets to become disorderly as one soon becomes accustomed to seeing equipment or supplies stored in either good or bad fashion. The time to make a rearrangement is at the beginning when one first sees the situation rather than to put it off to an elusive, constantly receding future.

6. Teacher's Office.—Every shop teacher needs a little office where he can place his desk, files, books and other reference material and where they will be protected from dust. Such an office need not have a floor area over six by eight feet. It is desirable to have it located so that it is an integral part of the shop; that is, either in or adjoining the shop proper. Glass partitions to give maximum visibility are desirable.

If such an office is not available the next best arrangement is probably to put the teacher's desk in the toolroom, though that depends upon circumstances. Another plan is to place the desk right out on the shop floor. Still another plan is to do away with such a desk entirely and substitute for it a demonstration bench with sets of drawers to be used by the instructor. If the floor

area available for shop purposes is exceedingly cramped, the "office" may have to dwindle down to a wall cabinet or a locker.

7. Demonstration Seats.—Some shops are laid out with demonstration chairs or seats, often placed compactly and in tiers, in the main shop. For elementary forms of shop instruction, or in general where much group instruction is given, such a device may be worthwhile. Some of the objections to demonstration seats placed in the main shop are: (1) they are uneconomical of space as they are not used much of the time; (2) they become dusty quickly; (3) they are not protected from shop noises; (4) little blackboard space is usually near at hand; (5) it is conducive to too much lecturing and other forms of group instruction. As an alternative there may be provided an adjoining room where trade theory is to be taught. Such a room can be properly equipped with chairs or desks, with blackboards, lanterns or motion picture machine or with any other equipment held to be desirable. The trade theory room can be made to serve several shop classes. A certain amount of trade theory can always be best taught in the shop. Blackboard space should be provided in the shops as well as in classrooms.

8. Shop Sketching and Drawing.—The question must be settled as to where shop sketching and drawing is to be taught, and who is to teach it. Assuming that a technical college graduate is teaching drafting and a "practical" man is handling the shop instruction, there must be close cooperation if all or nearly all sketching and drawing is to be satisfactorily done in the drafting room. A certain amount of shop sketching, detailing, layout drawing and the like can often be best taught by the shop teacher. Sometimes one or more drafting tables are placed in the shop or in the toolroom for precisely such purposes.

9. Reference Material.—Instructional material for vocational students comes from a variety of sources such as trade journals, trade catalogues, technical reports and circulars and papers. Instead of using a textbook the instructor may use various reference materials. Shall these be filed in the school library or in the shop? As a general principle are we ready to subscribe to the policy that instructional material of general interest is to be

kept in the school library where everyone can have access to it and that instructional material of a highly specialized nature should be kept in the shop where the students can use it freely and with greatest convenience? If so we shall want to plan the shop accordingly. Perhaps the toolroom boy can take charge of such material; or another plan is to make the material freely available to everyone in the class and to depend upon the class to take proper care of the literature so provided.

10. Other Special Requirements.—There may be special services required such as electricity, gas, heat and water other than for general purposes. These should receive careful thought. If a special foundation, a flue, exhaust fan, or other special feature will be needed, that too must be taken into account. Sometimes grade openings are wanted so that cars, machines and materials can readily be brought into the shop. In other cases elevator service must be provided and door or window openings must be large enough to admit the largest equipment that is to be used, unless it is feasible to assemble it in the shop. If certain highly inflammable materials are to be used they should be kept in fire-proof cabinets.

11. Arranging Equipment.—In order that various arrangements of equipment in the proposed shop may be studied to advantage the following procedure is helpful: (1) Secure from trade catalogues or from other sources the floor area and the working area required for all machines or units of equipment. (2) Draw to scale an outline of each of these units, labeling or marking each for ready identification. These little plans of the various machines should preferably be drawn on fairly heavy drawing or detail paper. They may also be cut from blueprints if such are available. (3) Arrange them on the shop plan which has been fastened to a drawing board, using a pin or small thumbtack to hold each machine plan temporarily in position. (4) Study this temporary arrangement; try shifting different units to see what the net effect will be. Keep this up until a satisfactory arrangement has been worked out, then pin-prick the outlines, draw in the connecting lines, remove the small individual machine outline plans and store them for future use.

In case it should be difficult to visualize the relative heights of the various equipment units, it may be worthwhile to substitute wooden blocks made to scale and conforming to the general outline of the machines they represent instead of floor plan outlines previously mentioned.

Tests for Equipment and Layout.—

(a) Is the equipment suitable for its purpose?
(b) Is the equipment adequate?
(c) Is the cost reasonable?
(d) Is the cost within the reach of available funds?
(e) Is the shop layout such as to reflect consideration of the following factors:
  (1) Production order.
  (2) Special instructional requirements.
  (3) Safety.
  (4) Health.
  (5) Convenience.
  (6) Flexibility.
  (7) Economy of space.

Summary.—Selecting the equipment and planning the shop layout should ordinarily be a cooperative affair in which the trade teacher, the trade advisory committee, and the director of vocational education all have a share. There are so many general as well as special factors to consider that one cannot hope to master the problems involved, even in several years. Both equipment and the science of shop layout are subject to gradual improvement.

For example, a strong tendency is manifested, at the present time, in industry as well as in schools, toward individually driven power machines as distinguished from those requiring line shafting. More attention than ever before is being given to safety and health as reflected by safety devices, safety instruction and adequate heat, light and ventilation. New inventions, changes in industry and the rapid increase of the school population make it necessary to study shop layout and equipment in a systematic, scientific, and practical way.

QUESTIONS AND PROBLEMS

1. What floor covering is proper around panel boards?

2. In what types of work are goggles required?

3. Make a list of supplies used in your trade teaching that deteriorate rather quickly with age.

4. What is your policy concerning the use of power-driven machinery?

5. Discuss the advantages and disadvantages of safety control switches located in several places in a school shop.

6. If an electric motor should overheat or catch fire, is it good practice to throw water upon it? Give reasons for your reply.

7. Describe a practical way of studying the arrangement of equipment in a shop that is to be built.

8. What modifications, if any, would you make in the layout of equipment in a school shop for your trade as distinguished from the layout you would use for a commercial shop?

9. What standards and policies can you set forth on the basis of which trade or industrial school shops should be equipped?

10. What is a low, and what is an adequate, amount for equipping a trade or industrial school shop in your trade or calling, figuring the size of the class to be in the neighborhood of eighteen or twenty persons?

11. What is a good way of stating operating costs in a school shop?

12. Make an estimate of the operating cost for your shop in terms of the cost per pupil-hour, figuring costs of instructional materials and supplies only. Heat, light and power are not to be included.

13. If you can have only one grinder in a school machine shop, which would you prefer a dry or a wet stone grinder? State reasons.

14. Under what conditions would you consider it desirable to install in a print shop the following: (a) linotype machine; (b) monotype equipment?

15. Is it desirable to have horizontal and vertical adjustments on the arbor of a universal saw bench?

16. Which do you prefer for a school print shop, a hand paper cutter or a power cutter?

17. Discuss the advantages and disadvantages of placing benches along the walls in a carpentry, patternmaking, or cabinet making shop.

18. What has been your experience with portable machinery? Under what conditions do you favor it?

19. Make a shop layout of school shop where instruction is to be given to a class of 18 to 24 students on a unit trade basis, part-time trade extension basis and evening school basis. Use a scale of one-fourth inch equals one foot.

20. Make an itemized list of all equipment in this shop showing the cost in accordance with present market prices.

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CHAPTER XIX

PRIVATE INITIATIVE IN INDUSTRIAL EDUCATION

Private or Public Auspices?—After apprenticeship had ceased to serve as the almost universal method of preparing persons for trade and industrial pursuits there followed a period of adjustment. During the years of the industrial revolution and immediately thereafter much uncertainty existed as to how training for the skilled trades might best be given. Educators, school patrons, business and industrial men engaged in warm discussions concerning the proper place that industrial education was to take in the life of the community. Should industrial training be given solely by industry? Should it be offered in the higher institutions of learning or should it be given in secondary schools? To what extent should industrial education be supported by public funds? These and other vital questions were before the public. In response to the need for trade and technical training which was felt, several different types of schools or institutions were established. They may be classified as follows:

1. Higher technical schools and colleges.
2. Technical schools of secondary grade.
3. Trade schools.

Each of these types can be subdivided and in the course of time some of these institutions modified their curriculums to meet the newer requirements.

Technical Schools.—It is necessary to differentiate between technical schools of high school grade, commonly known in many instances as technical high schools, and technical schools of college grade. The latter technical schools usually aim to prepare for some engineering profession, or for research work, for

designing, and for other occupations requiring considerable technical knowledge as a basis. But in addition some of them give definite trade training.

Technical education dates back to the time of earliest history. The pyramids of Egypt, and the aqueducts of Rome are but two examples of many that could be cited, that give silent evidence of the fact that there was early technical knowledge and achievement.

Various European countries developed excellent schools of technology which were distinct factors in the development of industry. Schools of technology usually were established as a result of urgent demands from industry, and their development was promoted by great international expositions, as those held at London in 1851, Paris in 1867, Vienna in 1873, and at Philadelphia in 1876.

The first higher technical school established in the United States was the Rensselaer Polytechnic Institute, 1824. This institution did not for some years after that give a four-year engineering course. Other schools followed, such as the Lawrence Scientific School of Harvard, the Sheffield Scientific School at Yale, and the Massachusetts Institute of Technology—the last opened in 1865. Closely following this were Lehigh University, 1866, Stevens' Institute of Technology, and others.

Technical Schools Giving Trade Training.—Among the well-known technical schools that give some trade or related training of secondary grade may be mentioned: Pratt Institute, Brooklyn, N. Y.; Wentworth Institute, Boston; Carnegie Institute, Pittsburgh; William Hood Dunwoody Institute, Minneapolis; Drexel Institute, Philadelphia; Rochester Mechanics Institute, Rochester, N. Y.; Hampton Normal and Agricultural Institute (for negroes), Hampton, Va.; Tuskegee Normal and Industrial Institute (for negroes), Tuskegee, Ala.

These institutions vary considerably in the extent of trade training given. For instance, the William Hood Dunwoody Institute is essentially a high-grade trade school more on the order of the David Rankin Jr. School of Mechanical Trades than on the order of Carnegie Institute, which latter institute is pri-

marily of college grade. In the main, these institutes devote their major efforts toward giving technical and engineering training of post-high school grade, but in addition, through day, part-time or evening classes, also give instruction that is designed to fit for wage-earning employments in the trade or industrial field.

Land Grant Colleges.—Attention has been called in an earlier chapter to the Land Grant Acts passed during the administration of President Abraham Lincoln and to colleges of agriculture and mechanic arts that were established under those acts. One of the provisions of that legislation was to establish instruction in the mechanic arts. This is mentioned at this point in order to show the trend from mechanic arts instruction given in institutions of post-high school grade to institutions of secondary grade. It appears to have been rather generally believed during the early years of the nineteenth century that technical or mechanic arts training as given in the higher technical schools and land grant colleges would function as trade training. This was a delusion of which we now are commonly aware.

The Technical High School.—The technical high schools developed somewhat later than did the schools of technology of college grade, such as the Massachusetts Institute of Technology, Pratt Institute, the Carnegie Institute of Technology, Lewis Institute and others in that general class. The technical high school is not to be confused with trade and industrial schools of secondary grade, whether they are organized as independent industrial schools or as departments in high schools. It has several rather distinct aims that differentiate it from a trade school or department. These may be summarized as follows: (1) The chief purpose is to prepare students for positions of leadership in industry that require considerable technical knowledge, though less than that required of engineers, and some mechanical training and skill though not as much as is secured by skilled craftsmen during a four-year apprenticeship. The aim, in other words, is to train for the junior engineering field—for such occupations as drafting, designing, testing, inspecting, estimating,

and supervising. Another aim of technical high schools is to give pre-engineering training in the same sense as the pre-medical school trains for entrance upon the college of medicine. Technical high schools and departments, then, have as a second aim preparation for entrance to higher technical schools or colleges of engineering. These are worthy, clear-cut objectives that warrant public support. It should be noted, however, that the technical high school does not solely aim to train specifically for entrance upon wage-earning occupations in the trade or industrial field. Instead of meeting the requirements of the National Vocational Education Act that specify that half-time or more, and not less than fifteen hours per week is to be devoted to instruction in shopwork, as is the case with unit trade schools or departments run on a vocational basis, the curriculum of the technical high school may provide some number of hours of shop instruction less than fifteen; such as six, eight, or ten hours per week. There may also be other differences, though not necessarily so, such as differences in equipment, in qualifications of instructors, in methods of shop instruction, in the nature of the instruction, and the product.

Trade Schools.—Owing to the evolution and change that have taken place in the meaning of certain technical words such as "industrial school," "trade school," "mechanic arts" and so forth, much confusion has arisen in the minds of laymen with respect to these terms. There are many kinds of trade schools as for example:

1. Private trade schools operated for profit.
2. Private trade schools of a philanthropic character.
3. Semi-private trade schools.
4. Public trade schools.
5. Corporation trade schools.
6. Trade schools operated by correctional and penal institutions.

In addition to the above classifications, trade schools may be classified as (a) Trade Schools for boys and men; (b) trade schools for girls and women; (c) trade schools for orphans;

(d) trade schools for the orphan and dependent children of soldiers, sailors and marines; and (e) trade schools for negroes or other groups specially selected. Some trade schools are rather hard to classify as their type of organization is in some respects unique. Some started as private, philanthropic enterprises and were later taken over by the public; in other instances private benevolence was responsible for, let us say, the building and equipment but not for the grounds or maintenance. Other combinations of private and public support could be mentioned.

Still another basis of classification refers to the nature of the curriculum as for example: (a) those giving short intensive units of instruction like the New York Trade School and the New York Electrical School, New York City, and those that give curriculums two to four years in length like the Connecticut State Trade Schools, the Delgado Trade School, New Orleans, the Williamson Free School of Mechanical Trades and the David Rankin Jr. School of Mechanical Trades.

Private School for Profit.—The private trade school conducted for profit is to be found in all large cities. Its career may be long or short depending upon circumstances. In general this type of trade school shows readiness to adapt itself to whatever training demands may arise. If new inventions, such as the radio, or the airplane, make their appearance the private trade school operated for profit is likely to be among the first in the field for training persons for the new jobs that are developing as a result of such inventions. Again, during the great war many private trade schools suddenly sprang up to do rehabilitation training. Some of them were quite successful financially. When plasterers are scarce the schools advertise training for plasterers and so it goes with other vocations. The private trade school operated for financial gain may offer good training and may give its students full value for the money received, but there are many exceptions to this. In certain lines, as for example schools for training of watch repairing and barbering, most of the training given is still given by schools conducted for gain but to an increasing extent private philan-

thropy and tax-supported schools are rendering the training service in many types of trade training.

Some Examples.—In order to illustrate several different types of trade schools, short sketches of a few schools will be presented. It should be kept in mind that the examples by no means constitute a complete list of the schools that deserve special mention. The first of these, the New York Trade School, deserves mention as a pioneer in the field. The two following schools to be described, the Williamson Free School of Mechanical Trades and the David Rankin Jr. School of Mechanical Trades, represent privately endowed philanthropic trade schools that illustrate the best schools of that particular type. This will be followed by a short sketch of the Mechanical School of Girard College, a somewhat different type of privately endowed school that makes a contribution to trade training. In brief the examples given are intended to illustrate something of the range of trade training given under private auspices.

The New York Trade School.—This school was founded in New York City by Richard T. Auchmuty, an architect, in 1881. The courses were four months in length and were designed to give a start at skilled trades to persons approximately seventeen to twenty-four years of age. The school is still in operation. It is recognized, of course, that it is impossible to teach a skilled trade in the short time mentioned, although the instruction is no doubt helpful as pre-employment training.

From 1881 to 1900 two other boys' trade schools of prominence were added. These were the Williamson Free School of Mechanical Trades and the Baron de Hirsch Trade School—the latter being founded in 1891 in New York City. These schools also are still in operation.

The Williamson Free School of Mechanical Trades.—The Williamson Free School of Mechanical Trades or "Williamson" as it is most frequently referred to by its many friends was founded by Isaiah V. Williamson in 1888. Mr. Williamson was a merchant of Philadelphia and a philanthropist. His early thoughts about trade training were stimulated by a trip to Europe where he came in touch with some of the arts schools.

It occurred to him that perhaps the general principles upon which the European arts schools were based could be profitably applied, with certain modifications, in the development of schools for mechanic rather than fine arts. Mr. Williamson became interested in establishing a trade school because he firmly believed in the opportunities that American industry has to offer to young men.

According to James A. Pratt, President of Williamson, there are 159 apprentices enrolled. They are distributed as follows: Carpenters, 32; patternmakers, 28; machinists, 28; power plant operators, 44; and brickmasons, 27.

The school is located on the Octoraro Branch of the Philadelphia, Baltimore and Washington Railroad operated by the Pennsylvania System, and is about sixteen miles from Philadelphia. Both the railroad station and the post-office are Williamson School, Delaware County, Pa.

The school provides free tuition and maintenance. More applications are received than can be accommodated. Those desiring to enter must be between sixteen and eighteen years of age. First consideration is given to boys born in Philadelphia; second, to those born in Bucks County, Pennsylvania; next those born in Montgomery and Delaware Counties, Pennsylvania and thereafter those born in Pennsylvania; those born in New Jersey, and those born within the boundaries of continental United States.

Entrance examinations are held at the school during the first week of July. Candidates must pass educational, personal and physical examinations. Admission takes place in September of each year. The school was organized "for the purpose of giving poor and deserving boys a good English education, for training them in the habits of morality, economy, and industry, and for teaching them trades"—"Special attention is called to the fact that the school is only for pupils who intend to follow for a livelihood the trades learned." [1]

After a preliminary trial the boys become indentured ap-

[1] The Williamson Free School of Mechanical Trades. A circular issued by the School.

prentices to the trustees for three or four years. Instruction is given on a unit trade basis, related subjects being taught from the standpoint of the trade selected.

The school is in session eight hours per day for five days per week and for three hours on Saturdays. Four hours per day are spent in trade work and four hours in related and non-vocational education. The school is open during the entire year, the summer recess being observed during July and August.

In as far as possible the domestic life is made to conform to good home requirements. The apprentices are divided into groups of approximately twenty-four with a matron in charge of each group. A central diningroom is used. The school is non-sectarian but the boys are required to attend religious services of their choice.

The trade work is made as practical as possible. The various trade classes have built many of the fine brick buildings that comprise the school group, and they do all sorts of practical trade work in accordance with the best trade standards. Quite a goodly number of the graduates, after they have supplemented their school training with employment experiences, have become trade teachers. The graduates have no difficulty in being placed upon graduation. Prominent men in manufacturing and industrial pursuits are interested in the school and it has now been in operation long enough so that many of its alumni hold responsible positions in industry.

The David Rankin Jr. School.—Like the Williamson Trade School the David Rankin Jr. School of Mechanical Trades is a philanthropic institution. It was founded by David Rankin, Jr., a long-time respected citizen of St. Louis, in whose honor the institution was named. Mr. Rankin conceived the idea of establishing a trade school some years before he died, after consultation with Rolla Wells then Mayor of St. Louis. He visited institutions of similar type in the East, and established a school that in many respects resembles in purpose and procedure the Williamson School.

The David Rankin School was opened in September, 1909, with an enrollment of twenty students. During the year 1928-

1929 there were enrolled 384 day students; 1218 evening school students, and 5 cooperative students, a total of 1607. The school has for a number of years been in charge of the late Lewis A. Gustafson who was nationally known for his interest in trade schools. He has been succeeded by Oliver H. Turner, formerly assistant superintendent.

The original endowments made by Mr. Rankin have been augmented by a bequest from the late Eli Hillis Larkin, creating the Larkin Foundation, and by bequests from Henry Andreas and Charles J. Andreas.

The instruction offered in the day school includes carpentry, plumbing, sign painting and decorating, patternmaking, machine shop practice, automobile repair, applied electricity and power plant operation and refrigeration. These and additional subjects are taught in the evening schools; among the latter may be mentioned acetylene welding, automobile repair, steam engineering, heating and ventilating, architectural drafting, machine drafting, sheet-metal pattern drafting, shop mathematics, and radio theory and practice.

The aim of the school is to train efficient mechanics. "The school is a trade school and does not prepare for college or for the engineering profession."[2]

Nominal tuitions are charged. Day students pay $15 per term or $45 per year; evening students pay a tuition of $10 per term for two evenings per week or $20 per term for four evenings per week for most courses. The school year for evening school purposes is divided into two terms.

The school is conveniently located within the city of St. Louis where evening classes can readily be recruited, thus enabling the school to use its equipment to maximum capacity. The regular day school is open to men and boys sixteen years of age or over. Boys between fourteen and fifteen who have completed the eighth grade or its equivalent and who show aptitude for trade work may be admitted.

The instruction for regular day students is laid out on a two-year basis. Special arrangements are made for students who

[2] Twentieth Annual Catalogue, p. 7.

have already entered upon employment. Slack-season instruction is recommended and students are welcome whenever they can fit their time into the program of the school.

Enrollment may take place at any time except in applied electricity, automobile repair and power plant operation.

Classes are in session from 8:30 a. m. to 4:10 p. m. with a forty-minute lunch period at noon on Monday to Friday inclusive.

The school year extends from September to July and is divided into three terms.

The school does not house its students as in the case of the Williamson School.[3]

Girard College.—Behind and above the speaker's platform in the House of Representatives in the state capitol at Harrisburg, Pennsylvania, one may see a finely executed painting that portrays in one composite whole many of the outstanding persons and events that helped to shape the early history of the commonwealth. In the center of this group the artist, Violet Oakley, has placed a man whose hand rests upon an orphan boy. The man is Stephen Girard, mariner and merchant prince—the founder of Girard College, Philadelphia.

Girard College is not, as the name would seem to indicate, a school of college grade. It is instead an institution for rearing and educating orphan boys. Neither is it exactly a trade school in the sense that that term is ordinarily used. It is a richly endowed orphans' school that provides various forms of general and vocational education, among them trade education.

Girard College was founded in 1831 and opened in 1838 at a time when private initiative in trade education was pioneering the way for public effort that was later to follow. Stephen Girard was the wealthiest man in America at the time of his death and the residuary of his estate, estimated at about six million dollars, was left to establish an institution for "poor male white orphan children." Girard College is reputed to be the richest orphans' school in the world. The original invest-

[3] For a more detailed description see the annual catalogue and the special circulars issued by the school.

ment has now increased, through wise handling, to about seventy-seven million dollars.

The entrance age for the boys is between six and ten years. They may stay in the institution until they are from fourteen to eighteen years old. Many more apply for admission than can be enrolled. Boys from the old city of Philadelphia have first claim for admission; next in claim are boys born in the state of Pennsylvania, and they in turn are followed by boys born in New York City and in New Orleans—cities in which Stephen Girard had engaged in business.

The present capacity of the college is about 1540 boys. In recent years from five to six hundred boys have been on the waiting list. More than twenty buildings comprise the group which are housed on a forty-acre tract of land now surrounded by the city.

Instruction, food, clothing, shelter and home care are free. Excellent facilities for medical and dental attention, for recreation and for religious instruction supplement the unusually fine provisions for intellectual and vocational training.

Owen D. Evans is Superintendent of the Mechanical School of Girard College. The boys may choose one of the following shops as a preparation for their vocation:

Carpentry	Foundry
Drafting	Machine
Electrical	Pattern
Printing	Forge

The large amount of maintenance, repair, and construction work that must of necessity be done in connection with an institution the size of Girard College makes it possible to provide abundant opportunity to make the trade training practical. It is not claimed that the boys will have attained journeyman standing when they graduate, but they will have had a good background of general education plus a good start vocationally.

The job of fitting the boys for successful entrance upon a vocation is divided, at Girard, into three periods. The first takes the boys in grades four, five and six and emphasizes general

education; the second embraces boys in the seventh grade and in the eighth grade or the first year of the high school as it is there organized. The objectives there center around prevocational aims, at least as far as the shopwork is concerned; and the third period consists of intensive trade training given on a basis comparable to unit trade training as carried on under the provisions of the National Vocational Education Act of 1917.

All junior and senior boys, about 200, who are taking trade courses, get this intensive training in addition to about 50 others from the intermediate school. Boys getting shop training on the intensive plan get from 12 to 16 hours of shopwork per week. A little of this time is spent in applied related instruction on the job but in view of the excellent high school instruction given during the early years of the course very little of the shop time needs to be devoted to trade theory.

The school maintains a guidance and placement service. After the boy leaves he is recommended for a definite job and he is given follow-up service until he appears to be well started in his vocation.

Dunwoody Institute.—The William Hood Dunwoody Industrial Institute of Minneapolis is an endowed vocational school. William Hood Dunwoody and wife left a fund of about five million dollars for a school that is to offer "free instruction in the industrial and mechanical arts to the youth of the city of Minneapolis and the state of Minnesota." The school was organized in 1914.[4]

Students attending the full-time day classes attend from 8:30 a. m. to 4:00 p. m. The day courses are from one to two years in length. Among the day courses offered are:

Automobile work	Highway construction and surveying
Baking	Sheet metal work
Building construction	Printing
Drafting	Machine shop
Electrical work	Painting and Paperhanging
Brick laying	
Farm mechanics	

[4] See circulars mentioned at the end of this chapter.

The younger boys, especially those under sixteen years of age, or those who have not completed the eighth grade, are started in a general shop department.

Dunwoody Institute has also set up plans for cooperative education involving cooperation with: (1) The Minneapolis Board of Education; (2) the University of Minnesota; (3) the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., and the Oakland Motor Car Company, Pontiac, Michigan; (4) with national, state and local associations. The regular courses call for eighteen months of time which may be distributed on the basis of two years of nine months each, or for four, five or six months per year for a correspondingly longer number of years.

Evening school classes are conducted in much the same trades and subjects as in the day school. Some classes meet for two evenings per week from 7:30 to 9:30 p. m., others once a week from 6:30 to 10:30 p. m. The courses vary, according to need, from ten to one hundred hours.

Dunwoody Institute has a tract of land equal to six city blocks. Two buildings, 75 by 285 feet, two stories high, were completed for occupancy in 1917. Future plans call for nine buildings. Dr. Charles A. Prosser, a national figure in vocational education, is the director of the institute.

The Y.M.C.A.—The Young Men's Christian Association may be classified as a semi-private association. It is an international association. Its educational program began in 1866 with a mere handful of sixty students. In 1926 Peffer states there were enrolled 100,000 in 350 schools of the United Y.M.C.A. Schools.[5] The Association estimates that 75 per cent of its educational work is vocational, and that 17 per cent of the total enrollment is in industrial subjects. In some cities the Y.M.C.A. cooperates with other educational institutions. The Y.M.C.A. schools have in a number of instances been more ready than have the public schools to provide trade training through evening and part-time classes to adults. They should not be regarded as undesirable competitors of the public schools

[5] Peffer, Nathaniel, "New Schools for Older Students," pp. 144-145.

for they have arisen in response to real needs and they reach many persons who cannot be attracted to a public school.

Knights of Columbus Schools.—The Knights of Columbus were organized in 1882. Their educational efforts were at first confined to welfare work and educational work during the war. Subsequently training service has been extended to ex-service men and to others both members and non-members. Most of the service has been in the form of evening and correspondence instruction. In the main, the evening instruction given is vocational, and some of it is trade education. According to Peffer, in 1926 there were 8,465 more enrolled in auto mechanics than in all other courses that could be classified as cultural courses.[6]

The Delgado Central Trades School.—This school illustrates cooperative effort between private endowment and public assistance. Isaac Delgado was a native of the Bermudas who came to New Orleans and there made a fortune in sugar and molasses. Among the many benefactions left to the city was a liberal endowment to purchase the grounds, and erect the trade school which bears his name. The Delgado School, endowed through private initiative, is operated as a public school, is a part of the public school system of New Orleans and receives local and state support through the provisions of the state plan for vocational education and the National Vocational Education Act of 1917.

The trade school is housed in a substantial three-story building. The shops are large and are provided with good equipment. Among the trades taught are: machine shop practice; electrical work; printing and interior decorating, including paper hanging, marbling, canvasing walls and ceilings, paneling, etc. A course is also given in commercial cooking and stewardship.

Thaddeus Stevens Industrial School.—A somewhat different type of trade school, but one that like the Delgado School owes its existence to a combination of private and public effort, can be illustrated by the Thaddeus Stevens Trade School, Lancaster, Pa. Thaddeus Stevens, the strong champion of education and usually regarded as the founder of the public school

[6] Peffer, Nathaniel, "New Schools for Older Students," p. 165.

system in Pennsylvania, provided in his will that there should be established at Lancaster a school that would give orphan and poor deserving boys of Pennsylvania a good trade education, supplemented by related and general education subjects. The school provides a home and maintenance as well as instruction. William A. Bourne is the superintendent.

Boys between sixteen and eighteen years of age may be admitted. Preference is given to: (1) Full orphans; (2) half-orphans whose father is dead; (3) half orphans whose mother has died; and (4) other needy boys.

Entrance examinations are given which are approximately the equivalent of examinations given at the end of the sixth grade in the public schools.

There are no charges for tuition, board or fees for regularly enrolled students. The following trades are taught: Bricklaying; carpentry; electrical testing and construction; machine shop practice and pattern making. The courses are three years in length and are distributed proportionately as follows:

Courses of Study

Freshman:

Shop	23 hours per week
Drawing	6 hours per week
Academic	14 hours per week

Junior:

Shop	23 hours per week
Drawing	6 hours per week
Academic	14 hours per week

Senior:

Shop	39 hours per week
Drawing	8 hours per week
Academic	4 hours per week

The shop courses may be varied from time to time as circumstances may make it desirable.

The Thaddeus Stevens Trade School is controlled by a board of trustees of which the state superintendent of public instruction is an ex-officio member. The school is classified as a state-

aided school, receiving public support through legislative appropriations. It is not directly connected with the public school system of the city of Lancaster.

Hampton Normal and Agricultural Institute.—Hampton Institute, the oldest school of its type in America for negroes, is a private corporation that receives aid neither from the federal government nor from the state of Virginia, but for support depends upon a moderate endowment and gifts from its friends.

The charter, granted in 1870, specifies its purpose to be "the instruction of youth in the various common school, academic, and collegiate branches, the best methods of teaching them, and the best mode of practical industry in its application to agriculture and the mechanic arts."

Hampton Institute is a coeducational boarding school located on the Hampton River directly across from the city of Hampton. The campus contains 67 acres and about 139 buildings. The Armstrong-Slater Memorial Trade School was opened in 1896.

Applicants for admission must be sixteen years of age, must possess good health and good character, and should have completed the elementary school. Students entering the trade school must provide their own overalls, drafting instruments, or other small tools amounting to from $5 to $20. Tuition amounting to $100 per year is charged.

The trade school offers four-year courses in the following:

1. Automobile body building and wheelwrighting
2. Automobile mechanics
3. Blacksmithing
4. Bricklaying and plastering
5. Cabinet making
6. Carpentry
7. Machine work
8. Painting
9. Printing
10. Steamfitting and plumbing
11. Tailoring

Tinsmithing and upholstering are taught by special arrangement.

At least 4000 hours of actual tool practice are required at every trade. Related instruction, such as estimating, blueprint reading, drafting and trade hygiene are taught. Students taking

the four-year course must spend the second summer at the school where they receive careful supervision in the practical aspects of their curriculums.

A two-year course for builders is also given. The instruction in this course is not limited to woodwork but includes training with air compressors, testing machinery, cement work, etc., in order to assist the practical builder with the various aspects of the business.

Correctional Institutions.—It was distinctly more true a half century ago, but it may still in places be said with propriety, that if a boy wants to learn a trade he can get the opportunity most easily by being sentenced to a correctional institution. Such a plan of procedure is not recommended but we must not lose sight of the fact that the modern correctional institution or reformatory is strongly emphasizing vocational education as a means of constructive citizenship. Some of these institutions are doing more practical work than is being undertaken in many private and public trade schools. There is a great deal of maintenance and repair work of all kinds that has to be done in order to run a reformatory of 1000 or more inmates. Under the immediate direction of reformatory officers who are expert craftsmen, and who in some instances have also had professional education sufficient in amount to qualify them to hold standard certification as trade and industrial education teachers, the inmates may have unusually fine opportunities to learn skilled trades or at least enough of such trade practices so that they can get respectable employment.

The tendency among reformatories is to replace routine employment having little or no training value, such as making license tags, brooms, and burlap bags, with work that will do several things: (1) help to maintain the institution—that is, render the maintenance services; (2) help to rehabilitate the unskilled worker—make a skilled worker of him and incidentally start him in a vocation that will interest him, give him the chance to be so occupied in learning and doing useful work that he will have no time to get into trouble again.

Most of these correctional institutions are not now operated

under private initiative but private effort has had a part in introducing vocational training in correctional institutions. They are mentioned here as another type of agency that is doing its bit toward making persons vocationally competent.

Relative Scope.—The isolated examples that have been given of various forms of trade training that are either entirely or in part initiated by private enterprise have been presented with a view toward showing something of the range in the types of schools or agencies involved in this work. There is no complete and authentic record of all of such industrial training. It is hard to secure this because much of the training, especially that which is given under private control for private gain is frequently sporadic. Classes are started when there are special demands and are dropped when interest lags or when competition becomes too keen. There is undoubtedly much more of such trade training than statistics show and more than is commonly believed to exist. But it is equally certain that the amount of the training that is given by these agencies combined is relatively a very small item compared with the total training possibilities.

Why Private Schools Operated for Gain?—Private schools operated for financial gain were common before free public schools were introduced. In certain fields as for example in the realm of training for commercial callings, the private schools operated for gain are still very common. In the field of trade training private effort for pecuniary gain is taking a constantly receding place as tax-supported schools expand due to popular demand. The private school here being discussed has been a pioneer; in some instances it still is. For instance, watch repairing and jewelry engraving are taught hardly at all in tax-supported schools in the United States. The private school run for profit is likely to be especially sensitive to new needs; it will have a training program under way and will give it in shorter time than tax-supported schools. The instruction may or may not be thorough; it may prove very helpful or the training may represent a poor investment for the trainee—it all depends upon the kind of a school it is, whether it has competent teachers and

whether the instructional conditions measure up to the requirements. It is the exceptional school of this type that can successfully compete with public and semi-public schools that are supported by taxes, endowments or both.

Endowed Trade and Industrial Schools.—These schools have done the pioneer experimenting upon the results of which later public effort has been largely based. Not directly responsible for support to the communities in which they stand, these schools have dared to try out features that a public school cannot so readily undertake. Within the limits of their charters, which unfortunately have sometimes put undesirable restrictions upon them, the endowed trade and industrial schools are relatively free to pioneer the way. A school such as the William Hood Dunwoody Institute at Minneapolis, headed by one of the foremost leaders of vocational education in America, has a wonderful opportunity and is measuring up to it. The endowed trade school has the special opportunity of serving as a laboratory for the public schools.

The chief drawback to the service that some of the endowed trade and industrial schools might render lies in the fact that the well-meaning philanthropists who endowed them could not foresee the gigantic industrial development that has taken place during the nineteenth and twentieth centuries, and the charters or deeds of trust many times contain clauses that hamper the effectiveness of the service that can be rendered.

Semi-private Industrial Schools.—In certain respects the schools that fall into this general classification have advantages over the endowed private schools. The public feels more responsible for them; as they justify their existence and as the need for the special services that they render is generally felt to that extent, they can count upon increased financial support for physical equipment, personnel and maintenance. The trade training programs of some of these semi-private agencies have developed far beyond what could have been predicted even a few years ago.

Public Trade and Industrial Schools.—In their various forms, namely, all-day, part-time and evening, these schools have

already been discussed. It will suffice, therefore, merely to note in passing that while all of the private and semi-private training agencies engaged in one form or another of trade or industrial education have their place it remains for public initiative to round out and to supply through tax-supported schools and classes a large part of the service that is required. Another very considerable amount of training is being done in plant and corporation schools. These will be discussed in the next chapter.

Summary.—Following the decline of the old apprenticeship system of training skilled craftsmen, there followed a period of uncertainty as to how the need for skilled workers could best be filled. About the middle of the nineteenth century higher technical schools were established. Before the beginning of the next century, technical institutes giving both higher technical training and trade training were started, largely through private initiative. There were also begun before the twentieth century, three privately financed trade schools, namely, the New York Trade School, the Williamson Free School of Mechanical Trades, and the Baron de Hirsch Trade School. In addition to this there was also started through private aid the Baron de Hirsch Trade School for Girls and, in the South Hampton Institute and Tuskegee Institute; the latter, founded in 1870 by the Alabama legislature, was placed in charge of Booker T. Washington.

These events were taking place just before the Douglas Commission made its report and before the present century. In short order followed the establishment of a number of private, semi-public and public trade schools, among them the David Rankin Jr. School, 1907, the Milwaukee School of Trades, 1906-1907, the Portland (Oregon) School of Trades, the Rochester Factory School, The Boys' Trade School (Philadelphia), the Columbus Trades School, and a number of others. Private initiative had much to do with the development of systematically conducted trade training in the United States.

QUESTIONS AND PROBLEMS

1. Explain why higher technical schools were established in America before trade and industrial schools of secondary grade.

2. Explain the development of the technical institutes. Did they include trade training from the beginning?

3. Make a detailed report upon a technical school, giving trade training —one not mentioned in the text.

4. Make a similar report upon a private or a semi-private trade or industrial school.

5. Make a list of private trade or industrial schools that are operated for financial gain.

6. Report upon Tuskegee Institute.

7. Should private or semi-private industrial schools be recognized as the equivalent of public part-time schools in the sense that attendance upon the former shall be accepted in lieu of compulsory part-time attendance upon the latter?

8. If the preceding question is answered in the affirmative, who shall determine the fitness of the private or semi-private schools?

9. Should attendance upon parochial schools be accepted in lieu of attendance upon compulsory part-time classes?

10. Should private and semi-private schools be required to measure up to the same standards that are set for public trade and industrial schools?

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CHAPTER XX

APPRENTICESHIP AND SPECIAL TRAINING

I. APPRENTICE TRAINING

Apprenticeship Defined.—In Chapter II, "Industrial Education in Colonial Days," the subject of apprenticeship was briefly discussed from the standpoint of its relation to the development of industrial education. It was pointed out that during different periods of history various connotations were placed upon the term. A good modern definition of apprenticeship as the term is commonly understood today was set forth by the Wisconsin Statutes (see page 2).

Another definition, suggested by the National Metal Trades Association, is: "*An apprenticeship is that formal relationship between employer and apprentice through which the mutual obligations and duties of each are established by written agreement.*"[1] It will be noted that the latter definition is more specific than the former with reference to the written agreement. As we shall show presently, a written agreement is not always necessary. As we commonly use the term "apprenticeship" we think of it as an agreement, which may be in writing or may simply be an oral understanding, in accordance with which a learner is to receive training and usually also additional compensation for work or service that he is to render to his employer.

Formal and Informal Apprenticeship.—By a formal apprenticeship is meant one that is based upon a written agreement. An informal apprenticeship is one based upon an oral understanding. There are also even less formal types, as for instance where the learner serves as an assistant or as a helper without being classified as a learner. Such a person is not con-

[1] National Metal Trades Association. "Apprenticeship in the Metal Trades," p. 6.

sidered to be an apprentice if the following definition is used: "An apprentice is one who is hired as a learner, who works as a learner, is taught as a learner, and is paid as a learner." On the other hand in some trades helpers, at least for purposes of determining the number of apprentices in the trade, are classified as apprentices.

There probably is much more informal than formal apprenticeship today. Therefore a true picture of apprenticeship can be obtained only by considering both types. Douglas has pointed out that apprenticeship in its essence is a contractual relation involving an exchange of work for training; that the written indenture is merely the legal document bearing witness to this relation, and that the contract may be binding in the absence of a written agreement.[2]

Why Apprenticeship?—Yes, the old guild type of apprenticeship that flourished during the Middle Ages is dead. But it is a mistake to think that apprenticeship has disappeared, for out of the ancient institution of apprenticeship have developed new types designed to meet modern conditions. Apprenticeship will be needed as long as skilled trades are followed. Industry will bear its proper proportion of the investment and so will the schools. At no time in our history has there been a greater need for skilled workers than exists today. There are, to be sure, enough workers but not enough highly skilled ones. The Industrial Commission of Wisconsin estimates that "there are approximately seventy-five occupations in which apprenticeship is adaptable."[3] This includes only occupations in the trade and industrial field. A relatively small proportion of these 75 occupations have well established systems of real apprenticeship training as distinguished from having merely helpers or assistants who "pick-up" the trade.

The chief reasons for modern systems of apprenticeship training are economic and educational. We need highly skilled

[2] Douglas, Paul H. American "Apprenticeship and Industrial Education," p. 12.

[3] Industrial Commisison of Wisconsin. "The Apprenticeship Law with Explanations," p. 5.

workers to carry on many aspects of trade and industrial work, and the most economical way to train them is through carefully planned instruction given by persons especially competent to render that service.

Types of Apprenticeship.—On the basis of the person or agency sponsoring the training, apprenticeship may be classified into four types: (1) Apprenticeship given by individual employers. (2) Apprenticeship given by individual employers cooperating with a national training agency such as the Pressmen's Union or the United Typothetæ of America. (3) Apprenticeship conducted by corporations, labor unions or other industrial groups. Examples of this are the apprenticeship systems maintained by the Sante Fé and other railroad companies and by public service corporations such as the General Electric Company. And (4) apprenticeship conducted jointly by industry and the public schools through part-time or evening classes.

On the basis of methods of organization apprenticeship can be classified as follows:

1. Apprenticeship given in corporation or plant trade schools.
2. Apprenticeship taught in training departments in industrial establishments.
3. Apprenticeship taught in part in a training department followed by training on the production floor.
4. Apprenticeship taught entirely "on the job" under the immediate direction of master workmen, foremen or journeymen.

The Corporation School.—The corporation school is a privately operated school conducted by an employer, corporation or business concern. The usual purpose is to prepare persons for efficient entrance upon definite types of employment or to advance the efficiency of those already employed. The scope of the training given in corporation schools varies from short, intensive special training given, for instance, to beginning machine operatives, through three- or four-year apprentice

courses, to training for foremen and executives. The training is usually definitely vocational but may also include a certain amount of general education.

A number of the larger corporations give apprenticeship training but very few have separate buildings for the purpose. Among corporations extensively carrying on apprenticeship training should be mentioned the railroads, the large manufacturers of electrical equipment such as the General Electric Company and the Westinghouse Electric and Manufacturing Company, and manufacturers of precision tools and machine tools. In most of these concerns the "school" is organized as a department in the plant.

Some corporations have separate school buildings that are used primarily for technical instruction; the apprentice training in the practical work being given either in training departments set up close to production departments or they are given "on the job" under regular employment conditions. Corporation apprentice training can be illustrated by the following brief description of the apprentice system of the Schenectady Works of the General Electric Company:

The shop apprentice system at the Schenectady works was organized in 1901. The training program started with systematic instruction in the various uses of machine tools. This was later supplemented by classroom work given during evening hours, and these in turn were later held during regular hours of employment and on company time. Apprentices are accepted at any time. The classroom work may be done as rapidly as desired within the time that is allotted to it. Applicants must be from sixteen to eighteen years of age, except molders' apprentices who must be between eighteen and twenty years of age. A trial period of from 30 to 60 days is served. A written agreement is used. The applicant is expected to know what trade he wishes to learn. The training periods are three and four years in length. The following courses are offered:

Machinist	Patternmaker
Draftsman	Blacksmith
Molder	Cabinet maker

All apprentices work on the regular working schedule. Two weeks of vacation are allowed each year. Rates of pay are specified in the contract. They may be increased through bonuses. A gratuity of one hundred dollars is paid upon the successful completion of the course.[4]

The Training Department.—This refers to a training department that, as far as organization is concerned, is separate from other departments of the plant. The department may be located on a part of a floor that is devoted to production, maintenance or service but the training department is nevertheless distinct. Other things being equal, it is advantageous to so locate the training department for then it is easy to bring practical jobs into it, and the learner also has the opportunity to see how work is carried on outside of the training department.

Where such departments are maintained it is usually customary to provide carefully planned instruction involving both manipulative work and related instruction such as shop mathematics, drafting and trade theory. All of the instruction is given by men who are thoroughly familiar with company requirements. It is of special importance that there shall be good working relations between the supervisor of apprentices and the foremen in the plant. Since a foreman's or a journeyman's income may in part depend upon bonuses secured through high production records it is apparent that under such circumstances the apprentice or the new man who is something of a novice is not especially welcome. It is therefore up to the supervisor of training to convince the production men that even though the product of the training department is not all that might be hoped for it is all that can reasonably be expected and it is much better from the standpoint of the journeyman and foreman than if there were no training department.

As a means of determining the trade efficiency of apprentices, records are kept showing the standard time required by a journeyman and the time consumed by apprentices together with a record of the accuracy with which the jobs are done. In so

[4] General Electric Company. "The Apprentice System," a bulletin issued by the Company.

far as possible commercial work is done and in some instances apprentices are permitted, during their last year, to do piecework where that is feasible.

Initial Training Department.—A modification of the training department discussed in the preceding paragraph is sometimes found in the form of a small training department whose primary function is to "break in" to a certain extent the apprentices who are then sent to a given department. The apprentices are later returned to the training department in order to receive other initial training of another type before they are sent to another department. In this way the training department is responsible only for a minimum initial training of various types whereas the major portion of the training is carried on under regular employment conditions. Employers having no training department could arrange to have such initial training given through part-time classes organized under the provisions of the National Vocational Education Act.

Training on the Job.—Under this plan of apprentice training the instruction is usually quite informal in character. The boy is frequently put in charge of a foreman or a skilled worker. His time may be divided on a prearranged basis between certain departments, with certain machines, or at specified processes or types of work, but instruction is likely to be a by-product, sometimes conscientiously met and in other instances quite neglected. This pertains especially to the related subjects instruction. Without regular classroom work this phase of the training work is frequently neglected. If the learner can attend part-time or evening classes where supplemental training is given, it improves the situation materially.

The effectiveness of training on the job is influenced by a number of factors such as: (a) the attitude and ability of those placed in charge of the apprentice; (b) the nature of the employment—if it is at difficult work the journeyman may not let the apprentice "try his hand" for a long time; (c) employment conditions—whether or not special bonuses are given for high production which may be secured at the expense of apprentice

training; and (d) the attitude toward training held by the management and by minor executives.

In exceptional cases, more often in small establishments or enterprises, where the owner is in direct charge, than in the large ones, training on the job will closely resemble in method and effectiveness the old guild type of apprenticeship with the father to son relationship. Fortunate is he who has the opportunity to learn a skilled trade directly at the hands of a master workman.

Since under modern production conditions it has been found difficult for foremen and gang foremen to devote any appreciable amount of time to instruction, it is very desirable, where apprentices are trained on the job, to have a training supervisor or instructor not responsible for production who can spend his entire time in instructing apprentices as they work on the commercial product under employment conditions.

The Santa Fé.—Among the railroads of the United States, many of which have apprentice training systems of considerable magnitude, the Santa Fé deserves special mention. In 1907, the road decided to establish a thorough apprenticeship system. The object was to train not alone for competency and skill but also to develop loyalty to the railroad, to increase interest in its business, and to assure familiarity with its standards and methods. A supervisor of apprentices whose sole duty lay in organizing and supervising the program was appointed.

The Santa Fé apprentice system has two coordinate branches. One of these branches has to do with school instruction given by the company; the other has to do with shop instruction likewise under the same control. In the smaller places where from 12 to 15 apprentices are employed the instructor has charge of both the school and the shop instruction. In still smaller places, too small to maintain a full-time instructor, a traveling instructor is supplied who spends two days per week at each such place.

At each mechanical point along its road the Santa Fé has established, in its shop buildings, a room supplied with school equipment such as chairs, desks, drafting instruments, charts and cabinets. This room is in charge of the apprentice school

instructor. Regular apprentices attend the school two hours per day for two days per week during the entire period of their apprenticeship. Since the production men have little time for instruction, the railroad employs a shop instructor for every 25 or fewer apprentices. This shop instructor is not responsible for output but is employed solely for instruction.

In addition to regular apprentices the company also employs a limited number of "helper apprentices" who have had experience as helpers and who are indentured for a three-year period. There are also three-year special apprentice courses for engineering school graduates. The latter get one year of machine-shop work, one year of erecting work and one year of varied work.

All instruction is individual. This holds true with the school work as well as with shop instruction. Individual instruction sheets are used. In this way progress is according to ability—no one is retarded by anyone else. The training program in each shop is in charge of an "Apprentice Board" composed of the general foreman, department foremen, gang foremen, pit foreman, school and shop instructors. They pass upon all matters pertaining to training, transfer, discipline, competency, etc.

It is particularly gratifying to observe that apprentice training "has the earnest personal and official backing of all the officers of the company from the president down" and that instructors and foremen have always worked together most harmoniously, each helping the other. The efficiency and success of the training system have been due in a large part to this hearty support and happy working relationship.[5]

The Lakeside Press.—The Lakeside Press had its beginning in 1864; it being first known as Church, Goodman and Donnelly, and now bears the name of R. R. Donnelly & Sons Company. The history of the Lakeside Press is most interesting but we can touch here only upon the training department and that very briefly.

In accordance with the ideas of T. E. Donnelly, president of

[5] Thomas, F. W. "Training Apprentices." A bulletin issued by the Atchison, Topeka & Santa Fé Railroad Co.

the company, the school of apprentices was opened in 1908. Starting originally as a school for training craftsmen for the composing room and pressroom, the functions of the school of apprentices widened and became the training department. The educational work now being undertaken includes instruction to apprentices, clerical workers, high school graduates for special positions and college graduates, engineers and others. The apprentice training is divided into two groups—the pre-apprentice group and the apprentices. The pre-apprentice course varies from a few months to two years. It is recognized as an approved substitute for compulsory part-time continuation education. At the end of a trial period of six months the pre-apprentice is given an agreement or indenture that will assure him steady employment, definite wage increases and excellent training under highly skilled craftsmen.

In some instances apprentices may attend high school for a half day and the school of apprentices the other half. Arrangements are also made in some instances for cooperative training for those who desire a college education with the University of Chicago and the University of Cincinnati.

Critics of the school have said that even if the boys graduated they would leave shortly thereafter. This is not usual. Of the first 165 apprentices, 130 are still employed by the company. Of these 19 are foremen, 3 salesmen, and 14 are in various executive positions.

The Taylor System of scientific management is used. All apprentices learn that work is measured in both quality and quantity. The man who is directly responsible for the training department is Edward E. Sheldon, supervisor of training, who has been in charge of the work for many years. R. R. Donnelly & Sons Company operates three plants with equipment valued in the neighborhood of $4,000,000 and employs about 2,000 people continuously. Several hundred boys are being trained in the apprentice departments alone.[6]

[6] R. R. Donnelly & Sons Company. "The Training Department of the Lakeside Press. A historical sketch illustrated." See also: "Training Craftsmen at the Lakeside Press." Published by the Company, Chicago.

National Cash Register Company.—The plan of education of apprentices of the National Cash Register Company of Dayton, Ohio, is of special interest as representing a training program in which a large employing concern, the public schools, and the municipal University of Cincinnati all work together.

The educational plan for apprentices at the plant of the National Cash Register Company is the result of careful study of similar plans in operation in various places in the United States. The general purpose is "to increase the knowledge, the efficiency, and the earning power of future mechanics, or to make it possible for boys, who desire, to enter the university in one of the engineering courses." Apprentices have the option of being taught to be:

1. Toolmakers
2. Modelmakers
3. Cabinet makers
4. Patternmakers
5. Electricians
6. Pressmen
7. Designers
8. Compositors
9. Electrotypers
10. Book binders

In brief, the general plan includes attendance upon regular high school for two years (age 14 to 16), followed by two years at the Dayton Cooperative Industrial High School (age 16 to 18). At this point the apprentice has two alternatives from which to select. The first is that he continue as an apprentice until the expiration of his indenture. Under this plan he receives at least one-half day of continuation school work per week. The second alternative is that he may elect to enter one of the engineering professions. In this case the National Cash Register Company will cooperate with the University of Cincinnati. Under the latter arrangement the boy will spend alternate periods of four weeks at the University, and at the plant, for five additional years, when he will be eligible for graduation.

The entire curriculums in the various trades are carefully worked out and are issued by the company so that prospective apprentices and others can see what is involved in the various plans of training.[7]

[7] National Cash Register Company. "Outline of Plan for the Education of Apprentices." Issued by the Company, Dayton, Ohio.

The Granite Industry.—The granite industry in the New England States has certain problems in common with other industries, one of which is apprenticeship. Consideration is here given to the industry because it provides an example of how the approach was made to develop skilled apprentices. For a number of years prior to 1924, the industry had gradually come to the point of view that better training was needed for apprentices and also for journeymen in the industry.

1. The First Step.—The first definite step was taken in 1924, when an apprentice survey was conducted. It revealed that not enough apprentices were trained to meet future demands. It also disclosed that a large majority of the employers favored definite courses of training if it could be shown that it is practical to carry them out. This led to an investigation of training methods and resulted in contacts with the Federal Board for Vocational Education.

2. Apprentice Training Conference.—About two years after the survey there was held in Boston an apprentice training conference that was attended by representatives of the following organizations: The Apprentice Commission of the industry; the Federal Board for Vocational Education; state departments of vocational education; the Building Congress; and journeymen granite cutters. The latter were brought in for the two-fold purpose of using them as future instructors of apprentices and to have them check the partially completed analysis that had been made of the granite-cutting industry.

It was found that by meeting certain conditions the industry could expect public support in its plan of apprentice training. A fund of $5,000 was contributed by the associations of the granite industry to initiate a training program. The proceedings of this conference, setting forth in careful detail the transactions of the conference, were issued by the Industry.[8]

3. Trade Analysis.—As one of the initial steps in setting in operation a training program for the industry, there was pre-

[8] Apprenticeship Commission of the Granite Industry. "Report of Proceedings, Apprentice Training Conference, Sept. 15-25, 1926, Boston, Mass." Issued by the Association, 31 State Street, Boston, Mass.

pared by G. A. McGarvey, Agent for the Federal Board, and H. H. Sherman, secretary of the apprentice commission, assisted by representatives of trade associations and journeymen, an excellent analysis of the granite cutters' trade, which has subsequently been issued as a Federal Board Bulletin.[9] This job analysis serves as source data from which can be developed by instructors instruction material that can be arranged in the form of individual instruction sheets or in any other form that may be desired. The analyses were illustrated by drawings that help to clarify the points brought out in the analysis.

The National Association of Corporation Schools.—As far as is known the first apprentice training of the modern type that was undertaken in the United States was conducted by R. Hoe and Company, manufacturers of printing presses, New York City. This firm established apprentice training in 1872. It was followed by the Westinghouse Machine Company, East Pittsburgh, Pa., now a part of the Westinghouse Electric and Manufacturing Company, a concern that has ever since been keenly interested in apprentice and other forms of industrial education. This in turn was followed by the introduction of apprentice training by the Schenectady plant of the General Electric Company, which is also very much interested in educational work. Soon after 1900 corporation schools became more common.

In order to meet the need for more information concerning training undertaken by corporations, a meeting was called in 1913, at New York University and was attended by about sixty persons representing 35 corporations. It was voted to form the National Association of Corporation Schools. The original purpose phrased: "To render available to corporations authoritative data on corporation school methods successful and unsuccessful" was later modified as follows:

"1. To develop the efficiency of the individual employee.
2. To increase efficiency in industry.
3. To have the courses in established educational institu-

[9] Federal Board for Vocational Education. "Granite Cutting." Bulletin 137, June, 1929.

tions modified to meet more fully the needs of industry.''[10]

The subject matter presented at the 1915 and the 1916 conventions showed a broadening of interest for subjects such as employment plans, vocational guidance, and safety. During 1918 and 1919 a turning point became evident in the major interest of the association. It was ''personnel'' rather than corporation schools. There were probably a number of things that brought about that change. One was that following the war the human side of industry has received more consideration than before. Another was that the passage of the National Vocational Education Act offered opportunities, not before available, to cooperate with public school authorities in matters of trade education.

In 1920 the National Association of Corporation Schools was incorporated as the National Association of Corporation Training—an effort to substitute the word ''training'' for ''schools.'' In 1922 the National Association of Corporation Training was merged with the Industrial Relations Association of America, the combined group becoming known as the National Personnel Association. This last association changed its name in 1923 to the American Management Association. Lange summarizes these developments concisely as follows: ''The development of the American Management Association may be divided into four movements: 'corporation schools,' 'employment management,' 'personnel management,' and 'management.' The 'corporation schools' and employment management movement were contemporaneous and were followed by the 'personnel management' phase and subsequently by 'management.' ''[11]

State Apprenticeship Committees.—A few states have appointed state committees or commissions to assist in developing suitable apprentice training programs. In 1925, a conference was called at the Pennsylvania State College to discuss appren-

[10] National Association of Corporation Schools. ''Seventh Annual Proceedings,'' p. 5.

[11] Lange, W. H. ''The American Management Association and Its Predecessors,'' p. 4. Special Paper, No. 17. American Management Association, 1928.

ticeship with particular reference to the plumbing and heating industries. It was here suggested that a state joint apprenticeship committee for those industries should be appointed. This was done at a later meeting held at the state capitol. The following objectives for such a committee were presented:

1. Champion the cause of apprenticeship training in the state.
2. Get the people in the state familiar with the state plan for vocational education.
3. Advise schools concerning how they can cooperate with the trade in training apprentices.
4. Suggest ways and means of getting adequate training for all apprentices.
5. Outline minimum qualifications for entrance to the trade.
6. Suggest curriculum requirements.
7. Set up qualifications for instructors.
8. Suggest ways and means of training teachers.
9. To recommend forms for keeping proper records.
10. To suggest a plan of certification for apprentices.
11. To issue bulletins or statements on approved standards and suggestions on apprenticeship training; these to be based on studies of the situation in the state.
12. To cooperate with local joint apprenticeship commissions in working out their problems.

In order that a state committee may be able to do effective work along the lines just indicated several conditions must prevail. The most important of these is that those who make up the membership of the committee shall be willing to lay aside controversial matters that come up between labor and employers; that they agree that those matters shall be settled elsewhere by the industry itself, and that the sole function of the committee shall be to deal with trade education for those in the industry. If those representing labor and those representing employers on such a committee are sincerely interested in developing skilled workers, then the committee can be of consider-

able aid to a state in helping to promote and to initiate local programs. But if, on the other hand, the personnel of the committee are unwilling to cooperate in the matter of apprentice training in which they profess interest, then little is to be expected from such a committee in the way of constructive suggestions and active cooperation with state and local directors of vocational education who are ready to assist in every possible way to help industry to develop more efficient workers.

Apprenticeship in Building Trades.—Various reasons are given for the apparent shortage of apprentices in most of the building trades. It has been claimed, for instance, that union regulations governing the ratio of apprentices to journeymen have been largely responsible but this is not generally true for there are no greater proportion of apprentices to journeymen in open shop centers than in those operating on a closed shop basis.[12] It is far more probable that the shortage of apprentices in the building trades is due to the conditions of employment. For instance, it has been estimated that bricklayers work, on the average, about 180 days per year. In other building trades employment is little if any more continuous. Indentured apprenticeship pre-supposes continuous employment. What proportion of the smaller building trades contractors are prepared to guarantee continuous employment to either apprentices or journeymen?

Another factor is the labor turnover. It is so easy for an apprentice to ignore his agreement and so easy for employers carrying on no training for their men to hire those either partially or wholly trained by others that many contractors feel that it does not pay them to train apprentices. Still another factor is that under employment conditions there is little opportunity for training and apprentices cannot be fooled into serving very long at apprentice rates on work that does not permit them to get instruction.

Nor are the conditions just described limited to the building trades for they can be duplicated in other industries. Among the various solutions to many of these situations group action

[12] U. S. Department of Labor. Bulletin 459, p. 9.

deserves attention. It must be evident that while it is often a hopeless task for the individual contractor or employer to undertake the kinds of a training program that many people feel are needed, there nevertheless is the opportunity for group action.

National Programs.—There are a number of national trade associations that have recognized the need for better trained workers in their respective fields. Many have committees on trade education and some of them have educational directors who devote their entire time to apprentice and other training. Some of these associations are herewith briefly mentioned:

1. Associated Tile Manufacturers. It was felt by these manufacturers that their product—tile—would be used more extensively if there were more persons who could lay it with the same proficiency with which wood, for instance, is ordinarily handled. It was observed that the instructional material for tilesetters was limited in amount and not in a very usable form. Consequently Layton S. Hawkins, formerly assistant director of the Federal Board for Vocational Education, was employed to develop, with the assistance of the industry, suitable instructional material. Following the technique that had been used by the industrial education service of the Federal Board, but adding certain features, there was developed through job analysis, and perfected through try-out on apprentices, an apprentice training course for tilesetters which is now available through the secretary of the association. The national school for tilesetters is conducted at Dunwoody Institute, Minneapolis, but the course of study is being generally used by the rather limited number of schools that are teaching tile setting.

2. The Plumbing and Heating Industry. The National Association of Master Plumbers has for some years maintained an educational department with a full-time staff. The educational effort of this department extends not only to apprentices but also to journeymen, foremen, and master plumbers. Much excellent instructional material has been developed by the department in cooperation with the industry. In its work of promoting, organizing and administering training programs for the associa-

tion, the educational department has worked with school authorities—a policy that usually works out to the advantage of both the industry and the schools.

In the field of vocational education as well as in general education, one of the limiting factors in the development of adequate training is the teacher. In order to meet the demand for properly qualified instructors of plumbing, there is held, in cooperation with Carnegie Institute of Technology and the University of Pittsburgh, an annual teacher training conference at which both practical, related and professional instruction is given. These conferences are attended by plumbing teachers in service and by prospective plumbing teachers—the latter always practical men with excellent trade experience who hope to enter the teaching profession.

3. The Wall-Paper Industry. A few years ago the wall-paper manufacturers came to the same conclusion as did the tile manufacturers, namely, that the sale of their product was directly affected by the efficiency and the skill with which it was used. The greatest drawback to sales was no longer difficulty to manufacture but difficulty to sell in markets where competing products were making inroads. The National Association of Wall-Paper Manufacturers consequently selected E. K. Jenkins, a former state supervisor of industrial education, to head their newly created educational department. Job analyses were made and instructional material in the form of a course for paper hangers was developed and is free to those especially interested. In addition to the instructional material the education department has made it possible for schools teaching paper hanging to secure, free of cost, instructional materials such as wall-paper and paste.

4. The U.T.A. The employing printers of America have long been interested in apprentice training. The national association, The United Typothetae of America has a department of education of which Fred J. Hartman is director. The Typothetae issues many publications dealing with printing and related subjects which are classified as follows:

1. The U.T.A. Typographical Library.
2. Standard Text books on Printing.
3. Standard Apprenticeship Lessons.
4. Manual on Apprenticeship.
5. Management Courses.
6. Miscellaneous Publications.

The United Typothetae has three nationally approved schools: at Carnegie Institute of Technology where degree-granting courses are now being given in printing, at the Dunwoody Institute, and at Wentworth Institute.

5. *The Typographical Union.* This is a national association of union printers. The Typographical Union maintains a trade school at Pressman's Home, Tennessee, and also has a department of education which conducts apprentice training courses by the correspondence method. The satisfactory completion of these courses is recognized by appropriate certificates.

6. The National Retail Baker's Association. The National Retail Baker's Association has designated the Wm. Hood Dunwoody Institute, Minneapolis, as its national school. Here thorough instruction is given in all branches of the baking trade. The underlying science as well as skill is taught under the direction of competent instructors and with the aid of modern equipment.

7. The American Telephone & Telegraph Company. The A. T. & T. now carries on through its subsidiary companies one of the most extensive educational programs undertaken by private initiative in America. This program includes training for operatives, for apprentices, skilled workers and for minor and higher executives. In the past this training has been largely given in designated training centers but in the future it is planned to give some of the instruction out in the field. Extensive instructional material has been prepared and is being constantly brought up-to-date in line with industrial developments, and is being improved from a professional standpoint as a result of actual experience with learners. In training its executives the Company does not limit itself to its own training

personnel but makes arrangements with the most competent instructors available.

8. The National Founders' Association. The foundry industry has had difficulty in getting sufficient skilled workers. In order to assist in that matter, it was decided to employ an educational director who would work with the industry in developing suitable instructional material and in promoting and organizing apprentice classes. Under this plan apprentice training has developed considerably. Not all of the apprentice training for foundry apprentices is conducted by the employers alone for in some instances the public schools are cooperating. Several district programs have also been organized; that in the Pittsburgh district involves the public schools and the Carnegie Institute of Technology.

9. Other Associations. There are a number of other associations that give national support to training enterprises. Those mentioned illustrate the efforts being made by corporations and by individual employers and other groups, working independently or in cooperation with public or private educational agencies, to give apprentice training.

Transfer of Apprentices.—In order to assist in providing continuous employment in seasonal industries, it sometimes works out quite satisfactorily to transfer apprentices from one employer to another. The Wisconsin Apprenticeship Commission has suggested that such transfers, if made for short periods of a few weeks, may be considered as a loan and that no formal recognition need be given unless the apprentice comes within the provisions of the continuation school act, in which case the customary working permit is issued.

A few employers like to transfer apprentices in order that they may get a better all-around education, and directors of vocational education in public school systems also try to arrange for such transfers where it seems desirable from an educational standpoint with part-time cooperative apprentices.

In seasonal industries where transfers do not seem to be advisable, it may be desired to phrase the indenture, if it is used, in accordance with a standard clause for bricklayers' ap-

prentices as used in Wisconsin, which is: "The term of apprenticeship shall be four years, each year to consist of the entire building season, but the total working period to complete the apprenticeship to be not less than 36 months." [13]

Instructional Material.—A number of industries that do not themselves carry on apprenticeship training, except as it may be needed in their plants, have issued instructional material which is used by public and private schools in apprentice training. Some of this material is among the best instructional matter that is available. Lists of such supplementary material have recently been prepared by O. D. Adams [14] and by Homer J. Smith.[15] To illustrate the type of instructional material referred to, mention may be made of service bulletins and instruction books issued by automobile manufacturers, and also of instructional bulletins issued to explain the proper use of certain products such as cement, brick, terra cotta, slate, stone, lumber, celotex, paints, varnishes, lacquers, etc.; to improve design as in making furniture, building homes, and in costume design; and to acquaint persons with the proper use of tools and equipment.

Much of this instructional material is issued in bulletin form; some of it is in the form of individual instruction sheets; some is assembled in book form, and still other material appears in the form of problems presented in trade journals as for instance "Plumbing Problems" issued by the Domestic Engineering Company.

II. SPECIAL TRAINING

Special Training Defined.—The term "special training" is used for various types of training that are to be differentiated from apprentice education. *By special training is meant train-*

[13] Industrial Commission of Wisconsin. "The Apprenticeship Law with Explanations," p. 14.

[14] Adams, O. D. "A List of Supplementary Bulletins for Supervisors and Teachers in Trade and Industrial Training." Bulletin 10, State Board for Vocational Education, Salem, Oregon.

[15] Smith, Homer J. "Teaching Aids for the Asking." The University of Minnesota Press, 1928.

ing, usually given for relatively short periods of time, that aims to prepare persons for specialized jobs or responsibilities. A very common form of special training consists in training machine operatives and other workers in highly specialized manufacturing processes. Special training is given in a variety of places as for instance on the job, by means of vestibule training departments—the latter developed largely during the late war—, and in training departments in industry in private and in public schools.

Although the great majority of special training is for operatives of one type or another, other forms of it are designed to give technical training or certain aspects of organization, supervision and management. If desired the term "special training" can be subdivided into other classifications including technical training, foreman training, etc. In some instances the training may include both technical and manipulative training as in the case of engineering school graduates who enter special short-term courses in industry with a view of becoming maintenance men, salesmen, construction superintendents and research workers.

Vestibule Training.—The term "vestibule training" has been applied to short, intensive training given to beginners with the objective of preparing them to efficiently enter productive employment in industry. Somewhat as a person entering the vestibule of a home prepares to enter it by leaving unnecessary outer wraps in order to meet the different conditions in the home, so the prospective worker through vestibule training is prepared for the new job—usually specialized—at which he hopes to work.

The vestibule school is based upon the theory that most industrial workers do not need long training. It is figured that, if the vestibule school cannot complete the necessary training in the short initial training period, the foremen on the job can give the worker the finishing touches. It is on this point, for one, that there is disagreement between directors of education in industry. Most of them will probably admit that the plan will suffice for highly differentiated jobs, but that the vestibule

school supplemented by training on the job given by foremen will not adequately replace the broader apprentice training given by supervisors of training. It is evident that vestibule training is not a fit substitute for apprentice training.

Vestibule training has its place where the equipment on the production floor cannot to advantage be used for instruction; where the foremen and sub-foremen cannot take the time to train workers; where an instructor with highly specialized skill is required and where it is profitable both for the employer and for the employee to be brought to an efficient production basis in the least possible time.

The Foreman Instructor.—It is probably correct to say that by far the largest number of workers in industry learn by the "pick-up" method or by a modification of it. One of these modifications is to have the foreman give instruction when he can do so. It is exactly there where the greatest weakness in the plan lies—he does not have the time, frequently, to give instruction. On the other hand in other cases that is hardly true and one cannot generalize too much in this matter. In many instances, in skilled as well as in semi-skilled work, the foreman, the master workman or the skilled journeyman on the job will be the chief source of instruction. Recognizing this as a practical situation some industries are giving instructor training to foremen in order that they may be better instructors, even though the instruction is quite informal and unorganized from an educational point of view.

Up-Grading Training.—By "up-grading" training is meant instruction that fits a worker for the next higher job. It will be recognized that workers between fourteen and sixteen years of age are limited pretty largely to juvenile employment. They may enter a factory, receive vestibule or other initial training, work for a time at this job and then either advance or try another line of work. Progressive Management is on the lookout for persons with unusual ability and in a number of instances provides up-grading training—always just enough to permit the worker to follow profitably the next higher step. An organi-

zation such as the American Telephone & Telegraph Company undertakes a tremendous program of up-grading training. Other concerns do much the same thing. In certain types of industries —textile mills, candy factories, assembling plants, paper mills, furniture factories, paper-box factories, shoe factories, sash and door factories—and in a variety of others, the most suitable plan of training for many jobs is to make available up-grading training for those who give evidence of unusual ability.

This up-grading training can be given entirely within the plant or establishment or it may be given in part at least by other training agencies, depending upon what is required and what these other agencies can do.

It is believed that it will prove profitable to give more training to semi-skilled workers than is now undertaken. Public training agencies have hardly touched that field. It is probable that, when it is undertaken, much of it will be in the form of up-grading training given, in the main, in close cooperation with industry or in industry under conditions that the schools will not be in a position to duplicate.

Foreman-Training.—Another form of special training is that which is given to foremen, to supervisors and minor executives. It is also a form of up-grading training but, due to its importance and difference from other types of special training, it is customary to consider it separately. A distinction is made between instruction that extends a foreman's knowledge of his job as a supervisor, manager and instructor, and training given in order to make a foreman, educational director or personnel man a good instructor for other foremen. The former is called foreman-training and is reimbursable as trade extension training under the National Vocational Education Act, whereas the latter is classified as instructor- or teacher-training, reimbursable as teacher-training.

Foreman-training and also foreman-instructor-training—or "conference-leader training" as it is called when the point of view is improvement given by the conference method—have been extensively developed during the last decade or so by the staff

of the Federal Board for Vocational Education and in turn by state representatives of industrial education and others who were taught the technique by representatives of the Federal Board. Several states now employ full-time men for this work and a number of industrial concerns also have their own training personnel.[16]

Summary.—Apprentice training is by no means as "dead as King Tut" as some would have us believe. Although there is not available complete information concerning the present extent of apprenticeship training, studies such as those by John Van Liew Morris, Miss Jennie McMullen Turner of Wisconsin, Robert H. Spahr of the Chamber of Commerce of the United States, and by Walter F. Simon of the Industrial Commission of Wisconsin, show that there is a renewed interest in modern forms of apprenticeship.

For the small employer, it is generally agreed that the key to the situation lies in cooperation with other employers or with public or private schools or classes of various sorts; for the larger employer there is also new opportunity to cooperate in training work. Exploitation in apprentice training is not frequent, but there is still much waste of human resources through failure to provide suitable training and proper instructors. Among the obstacles to development of training especially suited to modern industrial needs are to be mentioned lack of understanding of the need for training, of what the employer can do, of what the schools can do and of the desirability from a consumer's standpoint of having such instruction more generally given.

As an indirect result of increased competition we shall give more attention also to various forms of special training. Our greatest hope for further progress lies in bringing about a more general appreciation of the advantages that will come from cooperation between all of the various individuals, firms, groups and agencies that are concerned in these matters in one way or another—that means all of us.

[16] For a thorough discussion of this topic, see Cushman, Frank, "Foremanship and Supervision." John Wiley & Sons, 1927.

QUESTIONS AND PROBLEMS

1. Define, in your own words, "apprenticeship."
2. Distinguish between a corporation school and a cooperative school.
3. What is meant by vestibule training?
4. Distinguish between vestibule and up-grading training.
5. Discuss the relative merits of a sliding as distinguished from a fixed rate for apprentices.
6. Should apprenticeship requirements be in terms of time, in terms of achievement and time, or in terms of accomplishment abilities only?
7. Briefly describe the Wisconsin Apprentice Law.
8. Make a report upon an apprentice training plan of your own selection, not included in this chapter.
9. Discuss the relative merits of a written indenture and an oral understanding of an agreement on apprentice training.
10. Can quality workmen be developed efficiently by the pick-up method? Explain.
11. What danger, if any, is there in under-paying apprentices? Of over-paying them?
12. How difficult is it to get apprentices in specific trades with which you are familiar?
13. Discuss the following: "A craftsman cannot be made in school; neither can he be made without the school."
14. Briefly trace the development of the American Management Association.
15. What inferences concerning training in industry may be drawn from the reorganizations that took place from the National Association of Corporation Schools to the American Management Association?
16. What division or department of the American Vocational Association has taken over some of the functions of the National Association of Corporation Schools?
17. Distinguish between foreman-training and foreman-instructor-training.
18. Describe the conference method as used with foremen.

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CHAPTER XXI

ACCIDENT PREVENTION AND VOCATIONAL REHABILITATION

I. ACCIDENT PREVENTION

Introduction to the Two Problems.—Accident prevention in its various forms is distinctly an educational problem. In this industrial age it has become increasingly important that public attention should be drawn to it and that more preventive and corrective measures should be taken. That this is being rather generally recognized may be seen from such action as the national conferences called in 1925 and 1926 by Secretary Hoover on street and highway safety. In the latter year also the National Society for the Study of Education issued a comprehensive report on "The present status of safety education." For some years prior to that the National Safety Council had been organized and has carried on a strong educational campaign to reduce accidents. Many state and local organizations both public and private are also working to reduce accidents. It will be our purpose to discuss accident prevention in industrial employments.

The problems of rehabilitation, like those of accident prevention, are many, and the subject has varied angles. For instance there are the big fields of rehabilitation of those injured in war —soldiers, sailors and marines; the rehabilitation of civilians injured in industry and that larger number injured through accident and sickness outside of industrial employment. It will be our purpose to limit the discussion of rehabilitation primarily to industrial rehabilitation as that term is defined in national legislation.

Relationships.—Though primarily concerned with accident prevention in industry, it would be unwise not to recognize the

close relation that exists between general accident campaigns and industrial safety. Safety teaching in the public schools from the kindergarten up helps to develop habits and attitudes that experts in industrial safety agree are more effective than the mere mechanical protections that can be set up in industry. If the latter would suffice there would be few accidents today in certain iron and steel industries because in many cases they are protected as much by mechanical guards and devices as appear to be practicable. But accidents occur in spite of this.

When a public school puts on a dramatization based on accident prevention it undertakes one of the most effective means of education for both pupils and school patrons. Plays by school children have an intense appeal to adults. Dramatization makes it possible to present lessons in a way that assures ready reception because the life situations can be effectively reproduced and because the lessons are visual as well as oral.

The Vocational School.—The vocational school has an unusual opportunity as well as a distinct humanitarian, social and moral responsibility to teach safety from every conceivable angle. This will include personal safety, the safety of coworkers, members of the family and of the work or play group. It also includes thinking about safety in terms of economic loss to the individual, the employer and to society as the inevitable accompaniment of accident.

By studying accident prevention in industry, by finding out the major causes of accidents occurring in employment, and by giving consideration to how the individual employer, associations and agencies of various kinds attack the problems we hope to develop policies, procedures and techniques applicable to school conditions. To illustrate, various authorities claim that only from ten to twenty-five per cent of accidents occur in the form of industrial accidents—to persons employed industrially. Obviously therefore the educational campaign against accidents must be broader than accidents caused in trade or industrial pursuits. The entire school system must therefore concentrate on the general aspects of accident prevention but it is especially

for the vocational industrial school to stress accident prevention as it relates to industrial work.

Mechanical Safeguards.—We shall take it as an axiom that in the school shop every effort will be made to have 100 per cent mechanical protection. No other condition is socially and educationally justifiable. What teacher is there or what member of a board of education can be found who upon serious consideration is personally willing to assume the responsibility of human injury where machines and equipment are not guarded according to law? And yet, here and there, not every effort has been made to have school shops protected 100 per cent mechanically. If so, it is, perhaps, a matter of oversight or of lack of detailed knowledge of the law and what constitutes proper mechanical protection.

One of the best ways of being safe on that point is to ask the state department of factory inspection to send a man to check up on the situation. The latter department may or may not have jurisdiction in the schools. What does that matter? It can be of help just the same and no doubt will be glad to help the shop teacher because no one better than the factory inspector realizes that accident prevention is an *educational* matter. Safety habits like other habits are learned through repetitive experience; these should be had, in so far as possible, before remunerative employment in industry begins.

We are not familiar with the detailed legal requirements in the various states concerning mechanical safeguards. In Pennsylvania we know it is illegal in industry to operate a machine that is not properly guarded and a person is liable to prosecution and imprisonment who removes a guard, for any reason such as to repair or adjust the machine, and who does not promptly replace it. It can be seen therefore how important it is that the industrial teacher shall live up to the spirit of the law himself and that he shall instill, in the form of permanent habits, the proper, humanitarian and legal requirements of using mechanical guards on hazardous machines and equipment.

The attitude on the part of some to resent using the various

home life and for citizenship. All of these considerations demand that all students, but especially industrial students, be taught first aid. It is not primarily for the rare instance in the school shop when the safety-first team will function but especially for the life beyond school for which the school seeks to fit its students.

When an accident occurs in the school shop there will be one or more teams to give it proper attention; when boys so trained get out in occupational work they will know what to do in case of necessity; when occasion demands—and there are many of them in the normal family circle—that same boy, trained in the school is ready to give the kind of first-aid treatment that is bred of previous training and experience under a school doctor or nurse.

Medical Service in Industry.—The position of the physician in industry has changed from that where the doctor was called only in case of accident to one where he directs many activities now recognized as proper functions of a medical department. Medical service rendered by the plant doctor or the plant nurse is by no means limited to the work in the plant infirmary. It extends to all parts of the plant and beyond the plant into the community and the homes. Medical work undertaken by the industrial physician includes such activities as the following:

1. Preventive measures.
2. Detection and treatment of occupational diseases.
3. Exclusion or control of communicable diseases.
4. Advising and corrective measures.
5. Assisting to eliminate worry on the part of workers over themselves or members of the family.
6. Sanitary and health conditions in the plant.
7. Studies of fatigue, illumination, ventilation, dusts, fumes, and other conditions affecting health and efficiency.

Sickness causes much more absenteeism than do accidents. It has been estimated that from five to twenty times as much

loss of time is caused through illness as through accidents. It may be seen therefore that illness of any kind is of importance to the employer as well as to the worker for it materially affects industrial efficiency. Not only is the sick person out of work but his machine may stand idle, which in turn may affect other workers.

In some respects a plant physician is in much the same position as a foreman—he must coordinate the interest of the men and the management; he must interpret each to the other, for the plant doctor through his personal contacts has the opportunity to do that.

There is among workers an attitude very frankly expressed by James H. Maurer, at a meeting called to discuss industrial nursing. Mr. Maurer, at that time President of the Pennsylvania Federation of Labor, voiced the following warning: "Labor generally, and organized labor especially, is inclined to be prejudiced against employee's 'welfare work.' The reason is not far to seek. It has too often been used as a sugar-coating to the pill of low wages and long hours. . . . Workers in America, as a rule, resent paternalism, even when it accompanies fair wages. Health and safety work within the plant need not fall into this category, however."[1]

Mr. Maurer then continued to elaborate by pointing out that such work must be done on a high professional plane without the "slightest flavor of 'spying-out' upon the worker."

The plant doctor and the industrial nurse have, without question, service to render that must be on a high professional plane. If the workers suspected that visits from the nurse or doctor were used to the disadvantage of the workers the medical and health program would react unfavorably.

Industrial Nursing and Safety.—Industrial nursing is relatively new. One firm employed a trained nurse in 1895 to care for sick and injured workers; during the war the Government

[1] Maurer, James H. "Labor and Industry," Vol. XIV, No. 8, August, 1927, p. 53.

furthered the service and a number of firms employed nurses.[2] From this small beginning there has developed an extended service highly specialized in nature and one calling for much resourcefulness. Some industrial establishments employ both a physician and one or more nurses. In other instances, only a nurse is on full-time duty. There are, of course, certain things a nurse cannot do without orders from a doctor. Where the plant is so situated that a doctor cannot come immediately in cases of emergency the industrial nurse sometimes has written orders to do certain things in given situations. Where there is no industrial physician the nurse may be made responsible for the general sanitary and health conditions of the plant, her exact responsibilities being determined to some extent by the ideas of her employer. She should be thoroughly familiar with the working conditions in the plant. Occupational diseases are relatively easy to cope with because they can be controlled by mechanical means and can be anticipated and largely prevented. It is a more difficult job with non-occupational diseases, as there is likely to be greater difficulty in locating the source or controlling them. Some medical authorities believe that industries should in general limit their medical service to occupational diseases and to accident prevention and care, but others feel that anything that affects the health and safety of the worker should come within the province of the industrial medical and nursing service, although the family or private physician may be called upon to take care of cases not directly connected with the industry.

Electricity a Factor in Safety.—By the more general introduction of individually-motor-driven machinery miles of shafting, more miles of belts, and innumerable couplings, gears, pulleys and other mechanical devices constituting hazards to workmen are being eliminated in industrial establishments and to a less extent, because there are fewer of them, in trade and industrial schools. The individually-motor-driven machine can

[2] Raub, Emile, "Industrial Nursing and Safety from the Point of View of the Industrial Nurse." In *Labor and Industry*, Vol. XIV, No. 8, pp. 13-16.

be built compactly and can be guarded more easily than when line and counter shafts were used.

Another safety feature made possible by the use of electricity is multiple points of safety control. Industrial practice appears to be ahead of school practice in this regard.

Safety Standards.—According to W. Dean Keefer, further progress in accident prevention will result from the perfection of safer operating methods.[3] These are being worked out in cooperation with industry by manufacturers of machinery and equipment by trade associations, the American Engineering Standards Committee, and the National Safety Council. To illustrate the scope of the work being undertaken by the American Engineering Standards Committee, that body has organized approximately fifty-five technical committees to study such things as ladders, grinders, and power presses and other devices, machines or equipment that are sources of accidents. Other cooperating agencies are the Safety Institute of America, the Underwriter's Laboratories, the National Board of Fire Underwriters and the International Association of Industrial Accident Boards and Commissions. It is highly desirable that industrial teachers, supervisors and directors keep in touch with the safety research work that is being undertaken by industry. Some vocational schools subscribe for the literature of the National Safety Council. In other instances industrial establishments pass the bulletin material of the National Safety Council on to the vocational schools after they have used it on their own bulletin boards.

The National Safety Council.—When accident prevention work was first undertaken there was much demand for information concerning it. Employers who were experimenting along that line were besieged with requests for information and they in turn desired the opportunity to secure information from all available sources. This led to the idea that there ought to be a

[3] Keefer, W. Dean, chief engineer and director, Industrial Division, National Safety Council. "Safety Standards In Industry," in *Labor and Industry*, Vol. XV, No. 10, October, 1928, pp. 10-13.

national clearing house for such information. In 1913 the National Safety Council was organized in New York City. Headquarters were opened in Chicago. The association is cooperative in character and is made up of employers and others interested in safety. From a membership of 40 in 1913 it has now grown to the point where several thousand large corporations, transportation companies, insurance companies, technical schools and other groups hold membership in it.

The objects are to promote the conservation of human life in industry, to supply safety information, to promote the establishment of district or local councils to be affiliated with the National Council, to assist in the standardization of safety devices, conditions and practices and to promote industrial safety through publicity and otherwise.

The Council publishes: (1) *The National Safety News,* (2) Safe Practices pamphlets, (3) posters for bulletin board use, and (4) numerous special publications.

State-Wide Regulation.—In accident prevention the most effective work in industry is being done by the individual safety-first committees that are organized within a plant or establishment. Such a committee can study, in the light of all available facts, the special hazards that to some extent are peculiar to that plant alone. Many factors must be considered in determining what are the best and safest practices in any given establishment.

But from the standpoint of how to best further a safety program on a wide scale, the most effective way is to have state-wide regulation plus cooperation among the states in order that there may also be desirable uniformity nationally. In its drive for state-wide regulation as a means of service one state, in 1928, introduced what was believed to be a new venture on a state-wide basis. It consists of using individual accident records to advance safety. Reports of all lost-time accidents in industry are sent to the state department. These records are being studied to determine just where most accidents occur. Trained inspectors then go to those places to see how the situations may

be remedied. This plan has the hearty endorsement of all employing and labor groups to which it has been presented.[4]

The building trades present special difficulties in the way of accident prevention owing to conditions peculiar to construction work. Building demolition has been shown to be badly in need of more stringent safety regulations. The general method of approach is to develop each contracting unit as a self-sustaining safety group.

Is it not desirable to have trade and industrial classes organized on much the same order? In cases where groups of students, as for instance electricians or carpenters, are doing practical work outside of the school shop should they not be organized wherever they may be working to handle accidents if they should occur?

Some Essentials.—It is highly desirable that all persons of secondary school age and over shall have a good general knowledge of what to do and what not to do in case of accidents. In industry the first-aid team in the shop should know, among other things, how to treat scratches, cuts and bruises; how to stop hemorrhages; how to stop bleeding by applying turniquets, and how to stop bleeding where these cannot be applied; and how to carry on artificial respiration. Other things will suggest themselves from the nature of the work undertaken. In some places burns need to be treated; in others, foreign particles may get into the eyes. It is well to know how far the first-aid team should go and where the case must be left to the doctor. Even a nurse may subject herself to criminal prosecution if she attempts to handle matters, and fails to do the proper thing, that require the services of a physician.[5]

Prohibitory Legislation.—It is no doubt correct to say that certain types of legislation, such as child labor legislation, which prohibits young children from working in industry and pro-

[4] Waters, Charles A. "Safety in the Construction Industry from the Viewpoint of the state." Address, National Safety Congress, New York City, 1928. Reprinted in *Labor and Industry*, Vol. XV, No. 11, Nov. 1928.

[5] See testimony of Dr. Loyal A. Shoudy, of the Bethlehem Steel Company, in *Labor and Industry*, Vol. XIV, No. 8, Aug. 1927, p. 28.

hibits persons from, let us say, sixteen to eighteen years of age from operating dangerous machinery, are to be regarded as social legislation that helps to protect childhood and through childhood society itself. Fuller has pointed out that "from two to three times as many children as adults in proportion to the number employed are killed or injured in industry."[6] But child labor has other grave disadvantages—the indirect results of starting occupational life before the child has had the opportunity to get even a fair minimum of background of general education so essential to the fullest development of its latent powers.

The Annual Loss.—Since there has now been going on in the United States a more or less concerted drive for a number of years to reduce accidents, what is the present situation and the trend? C. B. Auel of the National Safety Council gives the data shown in Table XIII.[7]

TABLE XII. FATALITIES PER 1,000,000 POPULATION

United States	860	Germany	384
Italy	840	Belgium	327
Switzerland	618	Holland	303
France	477	Denmark	223
Great Britain	473		

He estimates that, in spite of reduction in accidents occurring in industry, there is an annual increase of about 86,000 fatal accidents in the United States. The number of injured are variously estimated at from 2,000,000 to 10,000,000 and the annual financial loss, direct and indirect, runs into billions of dollars per year. The general introduction of the automobile has more than offset the gains made in accident reduction in industry and elsewhere brought about by safer practices, methods and devices. No doubt the fact that we have proportionately many more automobiles in the United States than

[6] Fuller, Raymond G. *Child Labor and the Constitution*, p. 105.

[7] Auel, C. B., in U. S. Bureau of Labor Bulletin 429, p. 108.

are to be found elsewhere accounts as much as any other factor for the poor showing we make on the percentage of fatal accidents. Another contributing factor is the speed maintained in work. It has been stated that the American miner produces one third more coal per day than does his British cousin, but that our mine fatalities are three times as high proportionately.

In the Pittsburgh Survey report, Eastman lists the following as being the chief preventable conditions from which work-accidents result: [8]

1. Lack of provision for safety in construction.
2. Long hours of work.
3. Too great speed maintained in many lines of work.
4. Inadequate plant inspection.
5. Failure to remedy known defects.
6. Inadequate warning and signal systems.
7. Inadequate instruction and direction of ignorant workers.

Intensive studies of mass statistics show, according to Downey, that though every accident may be "traceable to some act of omission, some want of foresight or insight, some failure of attention, skill or care on the part of some human agent," they are primarily attributable to the inherent hazards of industry. To illustrate this he points out that 78 per cent of the accidents occuring in the steel industry occur from six causes that are so classified, and in bituminous coal mining one half of the fatal and permanent injuries are caused by falling roofs and coal.[9]

II. WORKMEN'S COMPENSATION

Its History.—Accident prevention, child labor laws, workmen's compensation legislation and civilian rehabilitation are all progressive manifestations that bear witness to social progress, and particularly to the human rights accorded workers. In order to view this advance to best advantage it will be neces-

[8] Eastman, Crystal. *Work-accidents and the Law*, p. 107.
[9] Downey, E. H. *Workmen's Compensation*, p. 8.

sary to sketch briefly the evolution of the theories upon which the doctrine of workmen's compensation is based.

During the Middle Ages and before, and to some extent even during our own Colonial times, man was considered as personal property. If he was injured or hurt that was, to be sure, a "property" loss to the lord or master, but no thought was given to paying the injured person. In case of death there likewise was felt no responsibility to compensate the family. This condition was followed, when serfs and indentured servants were made free men, by a stage of progress during which the injured employee could resort to law. During these years the common law of employer's liability was developed. The liability of persons for injury or death was determined in accordance with a group of rules called the "Law of Negligence." According to the then prevailing ideas the employer's defense was based upon three assumptions:

1. That the cause of the accident involved a normal risk voluntarily assumed by the worker.
2. That the accident was caused by a fellow worker who was selected with ordinary care and that the worker should have foreseen the possibility of unintended injury from fellow workers.
3. That the injured person himself contributed to the accident by accepting employment that a prudent person would have refused.

These doctrines were spoken of as the doctrine of assumed risk on the part of the employer, the doctrine of negligence of a fellow servant and the doctrine of negligence of the employee. Speaking of the second of these, Stewart says: "The latter doctrine never gained any foothold on the Continent of Europe, is of comparative recent origin, and was confined to England until imported from there into the United States without paying any tariff duty." [10]

It soon became evident that the provisions of the common

[10] Stewart, Ethelbert, in Proceedings of Fourth National Conference on Vocational Rehabilitation, Memphis, Tenn., 1927, p. 116.

law were not suited to more modern conditions. In Germany an attempt had been made to enact an Employer's Liability Act in 1871 but without success. In 1884 the Accident Insurance Law was passed and in 1911 all the laws relating to workmen's compensation were codified.[11]

In the United States the period from about 1890 to 1911 was one of investigation. In 1911 ten states enacted laws. Employers to whom the underlying theory appeared radical and revolutionary became hearty supporters of the plan. In the short space of less than twenty years workmen's compensation has become almost universal in the United States—there being only five states that do not now have workmen's compensation laws—and in the rest of the civilized world also.

Underlying Principles.—There are several fundamental principles involved in workmen's compensation. They may be summarized as follows:

1. To furnish definite, prompt and reasonable compensation to be paid to those injured or their dependents for: (a) medical or hospital services; (b) maintenance of dependents until recovery; or (c) in case of death or permanent disability, aid to dependents until they can become self-supporting.
2. To use for the benefit of those injured or their dependents funds formerly spent in litigation.
3. To avoid the use of outgrown and unfair laws and to develop instead good working relations.
4. To place the burden of accident costs first upon the employer to be transferred by him to the consumer.

It may be seen that these principles represent a radical departure from the old ideas. It is no wonder that some employers visioned bankruptcy. Eastman found that in 377 fatal industrial accidents studied approximately 28 per cent were caused solely by those killed or by fellow workmen.[12] The question may

[11] Michelbacher, G. F., and Nial, Thomas M. *Workmen's Compensation Insurance*, p. 87.

[12] Eastman, Crystal. *Work-accident and the Law*, p. 104.

be asked why should the employer assume responsibility for that? The answer is: for the sake of "social expediency." It is believed that it is best that the consumer or society at large should pay the costs rather than to see individual workers and their dependents suffer. It is furthermore believed to be right that the first cost should be charged to the employer in order that he shall take every possible precaution to protect the workers from injury. It is generally conceded that the most effective accident prevention measures are those which are taken on an individual plant or individual work unit basis. The ultimate cost will be paid by the consumer.

As a result of workmen's compensation laws each employer knows how much it will cost him to carry insurance for the working force, and since all employers have the same information it leads to much more equitable competition. But it also makes possible for the worker prompt assistance within definitely prescribed limits. When workmen's compensation was first introduced the payments were lower than they now are—they had to be in order to assure the passage of the laws. Now that we have almost universal application of these laws it has been found possible to raise the compensation provided.

III. VOCATIONAL REHABILITATION

The National Act.—In 1920 Congress passed and the President approved "an Act to provide for the promotion of vocational rehabilitation of persons disabled in industry or otherwise and their return to civil employment."[13] This was not our first attempt to refit injured persons for employment and to place them in positions where they would be self-supporting, for during and since the World War the participating nations undertook that task on a scale never before attempted. At first the administration of the entire program of soldier and sailor rehabilitation in the United States was in the hands of the Federal Board for Vocational Education but it was soon found to be advantageous to combine the three government services affecting the government's activities with soldiers, sailors, and marines

[13] Public—No. 236—66th Congress.

into one bureau. These services included the War Risk, Hospitalization, and Vocational Rehabilitation. They were combined in the Veteran's Bureau which was organized in August, 1921.

Although the first thought in industrial rehabilitation was to include only those injured in work in industry, it soon became evident that a broader view ought to prevail and so the Act provides for all persons who are vocationally handicapped through physical defects or infirmity whether produced by accident, disease, or congenitally.

Social and Economic Significance.—Social service has passed through two distinct periods. The first one is characterized by remedial effort. In case of accident, for instance, the effort was made to help the injured person or his dependents. The second was one of prevention. This may be illustrated by accident prevention measures and by child labor legislation. Following these two periods there has come another—the one in which we now find ourselves—which emphasizes the constructive phase. Not content with relieving distress and with measures of prevention, the latest phase goes beyond that to rebuild and restore as in industrial rehabilitation where the injured person is given medical, surgical, educational and vocational assistance as a means of again making him a self-respecting, self-supporting member of society.

The social and the economic value of civilian rehabilitation work as carried on under the provisions of the National Act of June 2, 1930, is very great. Among the many misfortunes that cause distress, accident and sickness—particularly the latter—are most influential. Lapp has stated that "there are fully seven times as many people handicapped by sickness as by accident."[14] The tremendous financial loss incurred can be guessed at when it is recalled that the National Safety Council has estimated that the direct and indirect costs of industrial accidents in the United States alone run into billions of dollars. Great as are the economic losses brought about by sickness, through

[14] Lapp, John A. *Proceedings of the First National Conference on Vocational Rehabilitation*, St. Louis, Mo., 1922, p. 64.

accident, unemployment and other misfortunes, and correspondingly large as are the economic benefits derived through rehabilitation, it is conceivable that they are small compared with the unmeasurable direct and indirect benefits of a human or social nature that come from bringing hope where before there was despair and from developing the ability of self-support where that had been wiped out.

Rehabilitation work must not be regarded as a form of charity. It is rather an effort on the part of society to perform a duty that it owes to those who daily labor or who are unable to do so. From another point of view rehabilitation is a conservation of human resources; it stands on substantially the same footing as does vocational education itself—an investment for the purposes of conserving, developing and making available human resources in the interests of the individual, the family, the state and the nation.

Administration.—The National Vocational Rehabilitation Act is administered through the same boards in the states and nationally that administer the National Vocational Education Act, that is, the Federal Board for Vocational Education and the several state boards for vocational education. In the interests of efficiency, and realizing that civilian rehabilitation service requires a professionally trained personnel just as does vocational education and vocational teacher-training, the federal government has appointed, as have also many of the states, persons devoting their entire time to rehabilitation service.

The conditions of financial assistance on the part of the federal government and the provisions for cooperating with the states in rehabilitation work are very similar to those obtaining for vocational education. The state must, through legislative action, accept the provisions of the national act; it must submit for approval a state plan showing how it is contemplated to carry on the work; the service must be under the supervision and control of the state board and the state treasurer must give an accounting of funds received and spent and must certify that the state is at least matching dollar for dollar as is required.

There are several important differences between the National Vocational Rehabilitation Act and the National Vocational Education Act. The latter provides aid perpetually, unless the provisions of the act should be revoked by Congress—a matter that now seems extremely unlikely—whereas the former has a definite time limit and must be renewed to be effective at its term of expiration. Another difference is to be found in the purposes for which the funds are to be used.

State Acts.—A few states had passed state rehabilitation acts before the national act was passed. Among these was Pennsylvania. In this case the act provided that it should be administered by the state department of labor and industry. A Rehabilitation Bureau with a chief and a field and office staff was operating when the national act was passed. Instead of attempting to set up a duplicating staff in the state department of public instruction, it was decided to let the field work and the related office work be done by the bureau of rehabilitation of the department of labor and industry under the supervision and control of the state department of public instruction.

Case Work.—Rehabilitation service cannot be given by the group method. It requires individual work. The best work is done where the agent of the state is able to keep in close touch with all cases that come under his or her supervision. In determining what action to take in a given case points such as the following must be kept in mind:

1. Previous experience and training.
2. Present and probable future physical condition.
3. Mental attitude and capacity.
4. Hopes, preferences, ambition.
5. Probable opportunity in vocation for which training is to be undertaken.

It will be granted that to "size up" each case correctly and to be able to advise each person wisely with respect to the future training work that is to be undertaken is no easy task. This is especially true since no state has had funds sufficient to give to

all persons brought to its attention the training and maintenance desired.

The national act does not provide for "maintenance." The funds can be used for medical work, for surgical treatment, for hospital expenses and for appliances such as artificial legs and arms and for administration including salaries, office supplies and travelling expenses.

Types of Training.—Rehabilitation training is sometimes divided into two major types: "institutional training" which includes training given in private, semi-private, and public schools and colleges; and non-institutional training which includes "placement training" or that which is given "on the job," tutorial training given, for example, at the trainee's home, and correspondence instruction. The training given may also be divided into standard classifications used in vocational education as for instance, all day, part-time, evening, slack-season, trade preparatory and trade extension training.

Placement Training.—This is also known as job training and employment training. It consists in the field representative's "placing" the man in employment for training purposes. Additional compensation may be paid at the outset or only after a given proficiency has been attained. The man is placed on the job as a learner. This has all of the advantages and the unfavorable elements that have previously been discussed in connection with special and apprentice training in industry. From a rehabilitation standpoint one of the most unfavorable aspects of employment training is the fact that it is very difficult to give adequate supervision to such cases if their number is large or if they are widely scattered.

Placement training is used in many instances not because it is the best form of training in each specific case but because it is in some cases—often in many cases—the only feasible plan because of financial limitations on the part of both the trainee and the rehabilitation agency. In a number of instances employment training is the best type available, particularly in those occupations that cannot well be taught in the schools.

Second Injuries.—Rehabilitation workers often find it difficult to place persons in employment training or, in the case of institutionally trained persons, to place them in remunerative employment due to the fact that a person who already has a partial disability is more likely, than the person having no physical handicap, to become totally disabled. Under some plans of workmen's compensation that creates a very real difficulty as the employer or his agent the insurance company is held responsible for the total disability irrespective of the fact that he already had a partial disability at the time of employment. The compensation for total disability is also proportionately higher all of which makes the situation that much worse.

A number of states have now passed legislation to the effect that an employer will be held only to the extent of the disability incurred in his employ. That is, if a man previous to his employment has lost an eye and is unfortunate enough to lose the other while employed by Mr. X, the latter would in such case be held under the Compensation Act for the loss of one eye only.

Cooperating Agencies.—The various state rehabilitation offices are cooperating in every way possible with private as well as public agencies in the matter of giving the best possible service. At the first National Conference on Vocational Rehabilitation held at St. Louis in 1922, Oscar M. Sullivan, director of re-education, state of Minnesota, outlined eight different types of rehabilitation service and showed how private agencies had made it possible to render service that otherwise could not have been accomplished in the instances mentioned.[15] The types of service were:

1. Physical restoration.
2. Securing suitable prosthesis.
3. Upbuilding the morale.
4. Placement training.

[15] Sullivan, Oscar M. *Proceedings, First National Conference on Vocational Rehabilitation,* St. Louis, pp. 99-100.

5. Institutional training.
6. Tutorial instruction.
7. Correspondence training.
8. Establishment in a business.

The types of cooperating agencies include state agencies such as state departments of labor, of health and of welfare; county or city institutions such as hospitals, medical associations, state-aided institutions of various sorts, county commissioners, county and city boards of health; schools of many sorts including state institutions, state-aided institutions, public, private, and parochial schools; various service organizations such as the Red Cross, Veterans' organizations, Y.M.C.A., Y.W.C.A., Rotary, Kiwanis, Lions, etc.

Physical Restoration.—In some states, New Jersey for example, considerable emphasis has been placed upon physical restoration through surgical and other means. Through cooperating with other agencies the state staff are often able to assist in making available such service far beyond the reach of the state rehabilitation budget. There are more persons crippled congenitally or by accident or disease than is commonly supposed. It is estimated that in the neighborhood of 3 or 4 per thousand children under sixteen are so handicapped.[16]

Records.—The administration of a state program of rehabilitation requires that a number of careful records shall be kept over a period of years. They start with the first correspondence or the first interview between the agent and the prospective case and end only after the case is definitely closed. Even then the case may need to be reopened. Many cases are carried over as "live cases" from year to year. A system of cumulative records for each case which gives in one folder all of the records available for any given case has been found very satisfactory.

Rather complete records covering all cases handled are sent to the rehabilitation service of the Federal Board for Vocational

[16] Sullivan, Oscar M., and Snortum, Kenneth O. *Disabled Persons*, p. 60.

Education by the states. These records are used as a basis for federal reports and for further study and research.

Summary.—In this chapter are presented some of the aspects of three successive stages of social action of vital importance to all citizens and particularly so to persons interested in industrial education. We refer to (1) Accident Prevention; (2) Workmen's Compensation; and (3) Vocational Rehabilitation. To understand these successive efforts on the part of society it is desirable to see how one step has followed the other from slavery to serfdom and from there to freedom. The corresponding social changes manifested themselves in the following three stages: (1) Remedial measures aiming to help those in distress; (2) prevention as in the case of accident prevention efforts; and (3) constructive programs such as physical restoration and vocational rehabilitation.

Within the last twenty years there has come a tremendous change in policy concerning compensation to injured workers. What was in 1910 considered a radical policy in such matters has become almost universally adopted. As a result everyone concerned, the worker, the employer, and the consumer, is better off than formerly.

QUESTIONS AND PROBLEMS

1. In what sense may it be said that accident prevention is an educational problem?
2. Whose duty is it to see that all machines and equipment in the school shop are guarded 100 per cent?
3. In case a coordinator notices machines not properly guarded where co-operative students are employed what is his duty?
4. Which are more dangerous sharp or dull edge tools?
5. What are the provisions of the Child Labor Law in your State concerning the age at which power machinery may be operated?
6. Why do we not have a National Child Labor Law?
7. When was the first effective workmen's compensation law passed in the United States?
8. Is it best to pay compensation in a lump sum or in weekly installments? Why?
9. Under what conditions is it proper to use compensation allowances to cover rehabilitation costs?

10. In accordance with what theory is workmen's compensation charged to the employer?

11. Should the workmen's insurance law cover sickness as well as accidents? Explain.

12. In case a child is illegally employed and becomes injured does the Compensation Law apply? May damages be collected?

13. Under what conditions do persons receiving training in school shops come within the provisions of the Workmen's Compensation Act?

14. Do teachers come within the provisions of the Act?

15. Name one or more instances of trade or industrial schools that carry accident insurance for their teachers and pupils.

16. Are all handicapped persons eligible under the Federal and State rehabilitation Acts?

17. To what extent is it feasible to give rehabilitation training in the public trade or industrial school?

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CHAPTER XXII

VOCATIONAL GUIDANCE

Practical Experience.—He who has had actual first-hand experience in occupational life has a contribution to make to the guidance of youth. Actual work with the tools and materials in the processes of a trade or occupation and daily contact with the conditions of employment bring an understanding of such pursuits that cannot be obtained through observation and study alone.

The subject of "vocational guidance" is brought up at this point because it has a very definite relationship to vocational education and because it is believed that every vocational teacher is interested in knowing how he can use his wealth of personal vocational experience and his knowledge of industry to the greatest benefit of those who are preparing for occupational life, or those who, already so engaged, are seeking to improve their condition.

We go on the assumption that in a modern scheme of guidance carried on in the public schools the work will not fall to one or two but that every teacher in the system will have a part in it. Some will contribute primarily to educational guidance, others to health guidance and still others to vocational guidance, each according to his ability.

Terms Explained.—The term "guidance" is used as the broad, inclusive term that includes "educational guidance," "social guidance," "vocational guidance" and other aspects of guidance, some of which are mentioned herewith:

1. Curriculum guidance.
2. Social and civic guidance.
3. Personal analysis and counseling.
4. Guidance in health and physical education.

5. Avocational and recreational guidance.
6. Moral guidance.
7. Vocational guidance.
8. Placement and follow-up.

Vocational guidance fits into a comprehensive program of guidance in somewhat the same way that vocational education fits into the general scheme of education. Each type of guidance is coordinate with the others, all forms have their special place and all are essential to a well-rounded program.

Vocational guidance as defined by the National Guidance Association consists in *"the giving of information, experience, and advice in regard to choosing an occupation, preparing for it, entering it, and making progress in it."*

Relationships.—John Dewey has wisely said: "To find out what one is fitted to do and to secure the opportunity to do it is the key to happiness. Nothing is more tragic than failure to discover one's true business in life, or to find that one has drifted or been forced by circumstances into an uncongenial calling."[1] This quotation points out two conditions, the first of which is "finding out what one is fitted for" and the second, equally important, is "to secure the opportunity to do it." These two phrases illustrate the close relationship that must exist between vocational guidance and vocational education, for the former is chiefly concerned in finding the right niche for everyone, while vocational education seeks to prepare persons for their chosen life's work or to make them more proficient in the trade or calling selected.

Vocational guidance should be given before a vocational choice is made, during the time that vocation is being learned, and after employment begins to the time when it is reasonably certain that the learner is prepared to take his place in industry or wherever he finds his work.

Need for Guidance.—The need for guidance, including vocational guidance, has long been recognized. References to guidance are found in writings of ancient peoples as well as

[1] Dewey, John. *Democracy and Education*, p. 360.

those of moderns. There are many evidences of widespread interest in guidance in our own time. Much is being said and written upon the subject; many groups and organizations are interested in it and it is certain that the unorganized individual efforts that are made are far more extensive than is systematically organized guidance conducted as such.

It is well known that we are living in an age of great achievements when power gives us, in the United States, the equivalent of fifteen slaves per man; when super-power plants promise still greater things; when we have approximately forty per cent of the world's railroad mileage, or six times the world's average; when we have by far more automobiles than any other country; when telephone, telegraph, radio, aircraft and thousands of other inventions have helped to make our lives very complex and too hurried for our own good. These things are mentioned merely to indicate the trend of the times as an index of how difficult it is for us to find out what we are best fitted, by native endowment and by interest, to undertake as a vocation.

As Myers has so well pointed out, the present process of entering employment is exceedingly wasteful from both an economic and a social standpoint. The resultant loss affects the worker who is handicapped in various ways, the employer who has to compete in the open market in selling his product, and society as a whole which consumes or uses the product and suffers other losses brought about by the inefficient use of human and material resources.[2]

Objectives.—Some of the immediate objectives of vocational guidance are:

1. To study occupational literature.
2. To observe conditions of employment and how the world's work is being carried on.
3. To provide exploratory and try-out opportunities through school shop experiences.
4. To develop through all of the foregoing methods as well as through drawing, design, class discussions and in-

[2] Myers, George E. *The Problems of Vocational Guidance,* Chapter II.

directly through other subjects in the curriculum an appreciative understanding of vocational pursuits.

5. After a vocational choice is made to provide guidance related definitely to the occupation selected; this will include diagnostic and testing service to check on progress being made.
6. Placement in employment.
7. Follow-up service to check on the learner and on the instruction that has been given.

Occupational Literature.—This should include reading in standard texts on vocational information plus such literature as "Occupational Studies" as issued by the Cincinnati Public Schools, the Chicago Board of Education, the Federal Board for Vocational Education, the Milwaukee Vocational School, the Pittsburgh, Pa., Public Schools, the White Williams Foundation, Philadelphia, the New Orleans Public Schools, the Women's Bureau of the United States Bureau of Labor, and others. It has been found that such literature is very helpful because it gives in a concise way authoritive information that is difficult to get in as complete a way even by talking with persons who have worked for years at such occupations.

In the way of standard texts several have been issued that are profusely illustrated and are written expressly for young folks.

Observation.—Observation of conditions of employment and of methods and processes of manufacture or of carrying on the work of the vocation is greatly improved if preceded by class discussion in the course of which some preliminary information is given and where the observer is advised what to look for. The extent of such preparation for an observation is a matter of judgment for the teacher.

An observation trip made by the class under the guidance of the shop teacher or the teacher of related subjects serves as a motivating and vitalizing experience for the whole group. It can be made to tie up with both shop and related subjects instruction. It is a good idea to require written reports, illustrated

by free-hand sketches or clippings from magazines—the free-hand sketches are much to be preferred—of such observation trips. The reports should preferably be made in ink in note books. These will prove of interest to parents and school patrons and are likely to be prized by the pupils themselves. They also afford expression for artistic ability and for neatness in making reports.

Exploratory Training.—The matter of exploratory and try-out training as one of the main objectives of industrial arts education has been previously dealt with. In passing it should be pointed out, however, that such experiences are among the most helpful that the school can provide from a guidance standpoint. Study, observation and discussion are necessary to be sure but actual try-out is more real and more reliable too than diagnostic tests for purposes of determining a boy's interest and probable success in a given occupation.

The shop teacher is constantly trying to diagnose the boy. He surrounds him with varied typical experiences involving the tools, materials and processes of the trade, and he stands ever ready to give such individual instruction or information and help as may be needed. Try-out courses given on a pre-vocational, industrial arts level probably show mechanical ability or the lack of it in a rather general way because the instruction itself may be somewhat general. For instance, in a course in general woodwork or general metalwork taught in the junior high school the teacher should be able to detect both unsual ability and marked deficiency in "general woodwork." It is not claimed that participation in such general instruction is highly valuable for purposes of prognosticating which particular woodworking trade, such as cabinet making, carpentry or patternmaking, the pupil had better select. It is difficult enough to do that even on the basis of a year or more of pre-employment training given on a vocational level.

Extra-Curricular Activities.—Extra-curricular activities are now well-established features of many schools. With the more restricted opportunity for self expression that comes as a result of urban life, it has been found very helpful to have

club activities, directed by members of the instructional staffs, for purposes of providing suitable opportunities for pupils to develop avocational interests. These in turn sometimes develop into vocational interests. Like the try-out and exploratory training given in regularly conducted industrial arts classes, these extra-curricular activities serve as a good means of discovering pupil inclinations. Outstanding native ability is soon recognized in club work.

Guidance on the Job.—A distinction is to be made between learning by the trial and error method, which is all too common in employment, and guidance that is given on the job to learners whatever their designation or name may be. Probably by far the most common thing is to find such guidance given incidentally, meaning by that whenever the foreman, master workman or journeyman finds it necessary or possible to give helpful suggestions or to show how certain operations are performed to best advantage. More efficient and more scientific guidance is given as a rule where real apprenticeship conditions obtain.

Even though guidance on the job is usually irregular and short in extent it will be seen that under employment conditions there arise advantages, the most valuable perhaps being that the work is done under the actual conditions as found in industry. This leaves the learner under no misapprehension as to what he may expect in the way of working conditions.

Unfortunately there still remains in places a tendency to haze the apprentice and to play "practical jokes" on the "green" man. It is high time that this practice be entirely eliminated. In some instances permanent injuries and even death have resulted from such activities.

Counseling.—An important part of vocational guidance, and other guidance also, is giving advice or counsel. In order that this may be done to advantage it is reasonable to expect that the counselor shall possess the following:

1. An appropriate personality.
2. A knowledge of the requirements and opportunities of junior and adult occupations.

3. A knowledge of school curriculums and of training opportunities under public, semi-public and private auspices.
4. An understanding of the characteristics, the capacities and the job qualifications possessed by those to be guided.
5. An appreciation of his limitations as a counselor.

In view of the fact that no one can measure up one hundred per cent to such requirements several plans are followed. The first of these is to have counseling subdivided into several logical groups such as that which relates to: (a) educational guidance and (b) vocational guidance. Another plan is to perfect an organization whereby the counselor can call upon a number of people, all outstanding in their vocations, for assistance. If the counselor feels that he cannot give the necessary information as well as someone else, the pupil is sent to the other person. An interesting illustration of this is told of a boy who came into one of the placement offices. He wanted to become a lawyer—wanted to quit school to read law in an attorney's office. The counselor could not convince him that he was wrong about it, so she called up a prominent attorney who had previously indicated that he would gladly help the office at any time. In the course of a very few minutes he was able to convince the boy that if he really wished to become a lawyer he would have to get a high school education plus professional training. As a result the boy went back to school satisfied that the teacher as well as the placement office were right when they originally advised him to continue his schooling.

Training Counselors.—There appears to be a growing tendency to establish certain professional requirements for counselors. One state at least makes a special subsidy available for persons trained to give guidance in the public schools. Several states have set up certification requirements for guidance teachers and for counselors.

Kitson's view is that the training curriculums for vocational

counselors should be organized on a functional basis. He lists the following functions:

1. Gather information about vocations.
2. Impart this information.
3. Analyze individuals.
4. Counsel with individuals regarding:
   (a) Choice of vocation.
   (b) Preparation for vocation.
   (c) Training for vocation.
5. Place persons in jobs.
6. Follow up workers who have been placed.

It is his view that the professional training will be such as to give the techniques that are required to perform the various functions.[3]

The Placement Bureau.—Juvenile placement is a well-recognized form of vocational guidance. This form of service consists of four rather distinct steps: (1) Interviews with juveniles who are preparing to leave school in order to go to work. In many states having compulsory part-time school laws for children between 14 and 16 or 18 years of age the majority of such interviews have to do with pupils who are applying for their working papers. (2) Interviews with juveniles who for some reason or other are changing their jobs. (3) Assisting these young folks to find jobs—placement service. (4) Follow-up to make reasonably sure that those placed are able to meet the requirements of their jobs and that they are on the right road.

The service of the placement office is therefore much broader than merely finding jobs for persons. In one city approximately ten per cent of those who apply for working papers are persuaded to complete the high or the vocational schools before they get into employment. In each case all available information concerning the child's home conditions, his ability and future prospect are taken into consideration. It is known that

[3] Kitson, Harry D. "Training for Vocational Counselors," in *Vocational Guidance Magazine*, April, 1927, p. 314.

there are a few juveniles who may be as well off to leave school as to stay and there are others so situated financially that work seems necessary, but there are likewise many more who would be much better off if they continued in school longer. The placement bureau acts as an additional screen that directly assists in conserving the human resources of the coming generation.

Placement service demands a good deal of those in charge of the work. If an employer asks for a given type of person and is sent someone that is unsatisfactory the placement office may not have a second opportunity to make a recommendation. It is understood that a counselor cannot always be right in his judgment but training and experience in placement work go a long way toward reducing errors to a minimum—so much so that employers come to value highly the judgment of placement officers.

In the larger places at least most placements are made over the telephone. Personal contacts between the placement officers and industry are, to be sure, necessary to develop mutual confidence, and to give the counselor accurate information concerning employment conditions in the various plants or establishments. Follow-up work is done through correspondence, by means of the telephone and through personal contacts with personnel directors and employers either at the place of employment or elsewhere. It is desirable to have this done as systematically as circumstances permit.

A placement office or bureau must have a well-arranged record system for interviews. Placement and follow-up service must all be made a matter of record so that all essential information can be had about any individual case at a moment's notice.

Self-Guidance.—One of the fine points in interview and counseling technique is to know when to stop. In the last analysis the final objective of guidance is to develop in persons the ability to guide themselves. The closer the relationship the more difficult it is to give the child every opportunity to develop resourcefulness and initiative. For instance, it is a common

mistake for parents to try to decide for their adolescent children what vocation the latter should choose. Counseling like the use of instruction sheets in vocational education may well be rather explicit and detailed at first but must be such that the counselor or advisor gradually fades out of the picture as the learner develops ability to take care of himself.

Tests and Measurements.—From a number of angles it would be exceedingly helpful if one could successfully diagnose a person's abilities, interests and other factors involved in vocational success. Tests of various sorts have been devised. It is not our present purpose to become involved in a lengthy discussion of tests and measurements but merely to make a few observations that appear to relate rather directly to the theme of vocational guidance.

For guidance purposes we may distinguish between the following types of tests:

1. General intelligence tests.
2. Achievement tests.
3. Interest and aptitude tests.
4. Abilities tests.
5. Trade tests.
6. Personality tests.

It has been shown by a number of investigators that intelligence tests correlate highly with school marks and progress in general education subjects that involve linguistic ability to a considerable extent. A serious error is being made by some who classify pupils on the basis of general intelligence tests and then blithely assume that those in the lowest third ought to take up vocational courses. This is stretching the application of the test beyond the elastic limit and when that is done something has to break. It should be remembered that general intelligence tests are neither diagnostic nor prognostic of special interests and abilities.

Achievement tests have been developed for measuring attainment in many of the "fundamental subjects," such as reading, writing, arithmetic, spelling, composition, history, geog-

raphy, and language. Such tests in vocational subjects are harder to develop and few have so far been developed.

Aptitude tests, provided that they are known to be reliable, are of much value to industry as well as educationally. If a telephone company can give a short test to a prospective switchboard operator which will reveal her aptitude for that sort of work it is obviously of value in selecting employees. Tests such as the Stenquist mechanical aptitude tests and the Seashore musical tests illustrate what is meant by aptitude tests.

A distinction is made between aptitude for a thing and actual ability in it. For instance, a person may because of native capacity have special aptitudes without having developed them. The purpose of abilities tests is to measure actual attainment in knowledge and skill. Trade tests are special forms of ability tests.

One of the next steps in the field of tests and measurements concerns itself with developing trade tests that will measure ability of a special sort as for instance tests for electricians, machinists, draftsmen and auto mechanics. Such trade tests may employ one or more of the following devices:

1. Oral tests.
2. Written tests.
3. Performance tests.
4. Picture tests.

The purpose of trade tests is to measure occupational ability without resorting to the customary try-out method, which has proven most uneconomical. In the field of highly specialized occupations it is relatively easy to develop suitable ability tests; in the skilled trades that is difficult but not impossible.

Leadership.—In education as well as in business, leadership is required to develop products or types of service. At least one state as much as ten years ago appointed a guidance committee in its state department of public instruction and a supervisor of industrial education spent at least one-half of his time in helping to develop, in cooperation with city and county superintendents and others, plans of guidance that would be

appropriate to the local conditions. On the one hand the state supervisor worked hand-in-hand with members of the state department of public instruction who composed the advisory group on guidance in that group. He also worked with other members of the department. Then there was also a state guidance committee appointed by the departments of county and district superintendents of the state educational association. Other contacts were made with superintendents, principals, teachers, and associations that manifested interest in the movement. Although it takes longer to secure results through this method of cooperative leadership, it is believed that the method of approach is fundamentally sound. From a state standpoint it is desirable, nay necessary, to uphold the hands of the local administrative officers so that the local programs will involve local initiative and will reflect credit upon those the community has selected as its leaders.

While this program was under way some cities, both large and small, were developing their own programs either with or without close cooperation with the state office. The net results of these various efforts are gratifying. As with other new movements—for while guidance is very old, systematic, scientific guidance is new—there is much still left to be hoped for and to be accomplished. We are reminded that "Rome was not built in a day."

It has seemed particularly appropriate that the state selected a vocationally trained man as supervisor of guidance because it is the vocational guidance that is most difficult to render effectively by people in education. The average teacher is pretty well qualified to help in educational guidance and in social and moral guidance, but not in vocational guidance. So partly from the standpoint of keeping the good ship "Guidance" running on an even keel it is essential that persons familiar with vocational education should take an active part in guidance work. Out of consideration, too, of the relative numbers who will eventually enter the vocations, the matter of vocational guidance is highly important.

A Working Plan.—One of the functions of leadership is to develop plans of work that will function efficiently. As an example of this there is shown herewith a plan of a guidance program for a city.[4] This plan shows that the city program

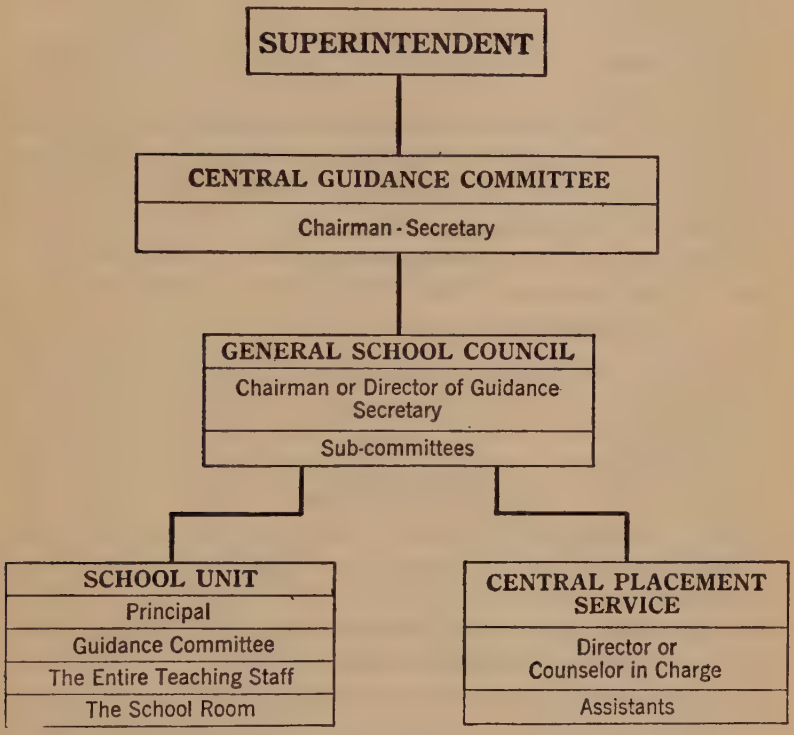

Diagram 3. A Suggested Plan of Organization of Guidance Activities in a City School System

heads up to the superintendent of schools. There is a central guidance committee which acts as a general steering committee and is composed of directors of special subjects, such as home-making, industrial education, physical education, etc., principals and supervisors.

[4] Commonwealth of Pennsylvania. "General Bulletin on Guidance," No. 13, p. 26.

The general school council acts in an intermediate capacity between the central guidance committee and the various school units. In many instances there is at the outset no director of guidance who has been especially trained for such work. The chairman of the general school council should then function in his stead, getting experience as the work develops.

Each school in turn has its guidance organization which works through the general school council and which also involves the entire teaching staff. Presumably all teachers can contribute something to the program. As guidance work develops more persons with special training will enter the service and will be used in accordance with their abilities.

Guidance Agencies.—Guidance begins in the home and extends to many agencies. The following are a few that make provision for vocational guidance:

1. Philanthropic agencies, especially those organized for social service, but including also a variety of educational institutions.

2. The Y.M.C.A., Y.W.C.A., K. of C., Y.M.H.A., etc. The personal contact and helpful attitude of these organizations exert a broad guiding influence over their memberships. In many instances they also serve as placement agencies for those seeking positions.

3. The schools, including public schools, semi-public schools and private and parochial schools.

4. Corporations and business concerns. They not only serve as selective agencies at the time of initial employment, but in a number of instances give guidance on the job and in cases where it is desirable transfer the employees to more suitable jobs.

5. Orphans' schools. Vocational guidance and vocational education are essential features in making self-supporting citizens of those who are left orphans.

6. Reformatories. The value of vocational guidance is well recognized as a necessary step toward honest and respectable living.

7. Penal institutions. Modern penology is based on the theory that constructive effort must replace destructive tendencies. Vocational guidance and vocational education of the types that will function in everyday life are therefore the means used.

8. Employment offices. These include municipal employment offices, state employment offices and federal employment offices.

9. The higher institutions of learning. In the last half decade particularly the colleges, technical schools and universities have stressed the need for orientation and guidance on the part particularly of freshmen. There is a tendency to develop in the colleges a personnel service that will assist in curriculum and vocational guidance.

Legislation and Rulings.—As a part of vocational guidance prospective workers in industrial pursuits should be made familiar with employment legislation and with rulings and decisions affecting employment as, for instance, the Child Labor Act, the Workmen's Compensation Act, Apprenticeship legislation, Safety Standards, and the State School Law with special reference to vocational education.

A distinction should be made between law and interpretations of law as found, for instance, in rulings of the state industrial board or of the state department or bureau of factory inspection. It is probable that rulings made by such boards are in accordance with the law but it may require a test case to determine it.

Seeking a Job.—Definite instructions about personal appearance and how to apply for a job have proven of value to many young persons sent out by school placement bureaus. The need for such information is not limited to juveniles by any means. Even college graduates who presumably ought to know how to meet people to advantage are sometimes in need of instruction on the fundamentals of how to meet the prospective employer.

There is also need for just as definite instruction in "how to hold a job and how to advance in it." Much depends upon

developing the habit of success. The habits of laziness or of failure started perhaps in the schoolroom and intensified through juvenile employment are serious handicaps to vocational success. Added to this there may be developed a spirit of discontent—the logical result of inadequate vocational preparation and "drifting" from job to job. Such an attitude still further handicaps a person and is a barrier to vocational progress.

The Vocational Teacher.—It was mentioned at the outset of this chapter that a comprehensive program of guidance as organized in the public schools should involve every teacher in the system. It was not our idea that all teachers would be classified as counselors or have official positions in the guidance organization. What was meant is that a comprehensive guidance program will involve local organization with proper leadership and representation and with a "working force" including all teachers. In case there is a systematic organization some of the functions of the vocational teacher will be determined, in part, by the type of guidance organization adopted. For instance, this may involve special talks, inspection trips or counseling that is to be done by the vocational teacher as a member of the guidance staff.

But even where there is no formal, systematic program of guidance the shop teacher can and does function, consciously or unconsciously, in guidance capacities, for it is impossible for him to do his duty as a vocational teacher without rendering guidance service. That is, if in his contact with a student any teacher has a chance to do vocational guidance where he can do it better than those with less contact with the student, he should not refrain because of the existence of a special vocational guidance counselor. Such guidance will be mainly vocational guidance to persons who have already made a vocational choice. Its nature may be:

1. Occupational Information. This will include a description of employment conditions in various plants; of standards of workmanship; of types of work undertaken; of special requirements; of materials used, their sources and characteristics; the processes of manufacture and other related information. This

information constitutes trade knowledge and vocational education, to be sure; but it also serves some of the purposes of vocational guidance.

2. Occupational Skills. Trade demonstrations given by the teacher help to establish both desirable work standards and work habits in pupils. Once developed, such standards and habits are likely to remain permanent possessions. A boy who in his youth has been taught to be a craftsman is likely to remain such and to find satisfaction in doing work in a workmanlike way.

3. Individual Help. Trade instruction particularly is almost exclusively individual. In daily contact the trade teacher has many opportunities to diagnose, to test, to teach and to guide the pupil. This opportunity to be a guiding force in the boy's life is accentuated by the fact that shop instruction appeals to the boy's constructive instinct, and quite naturally the teacher of the shopwork appears to the boy in a favorable light.

4. Inspirational Leadership. Boys admire men who can do things. It matters little whether that is to throw a lariat, to fly an airplane or to use hand or machine tools. Many teachers, both general and vocational, are doing as much for many of their pupils by emotionalizing their instruction and by inspiring them through example, word and deed, as they are through the information or knowledge that they impart. In our emphasis upon scientific diagnosing, trained counseling, and accurate recording let it not be said that inspirational leadership was forgotten.

Summary.—Guidance may be classified into three major types: educational guidance, social guidance, and vocational guidance. Vocational guidance should be given before, during and after vocational education. During the last half decade a number of public schools as well as several Foundations and a few state and federal agencies have made available a wealth of "occupational studies" which are most helpful in the informational aspect of guidance. Observation of employment conditions should be made as carefully and as systematically as inspection trips are made by teachers in well-ordered school

systems. Before the trip is made there should be preliminary instruction; after it is completed there should follow a careful written report—not long enough, however, to destroy the incentive for future trips.

Both industrial arts and extra-curricular activities are helpful in indicating vocational aptitudes and capacities. The number of extra-curricular activities permitted for any individual student should be limited.

A distinction is made between trial and error learning and guidance on the job. Counseling must be done seriously but not too seriously. It is work that requires much—personality, knowledge of industry, of human nature, of the individual in particular and of one's limitations as a counselor. Much harm is done by well-intentioned but nevertheless poor advice.

Placement bureau service includes interviewing, placement and follow-up service. It also requires close cooperation with the schools and industry and involves systematic recording.

Tests and measurements serve, in the hands of competent persons, as scientific devices that can be used effectively within prescribed limits. When not properly used they are as useful as a carelessly tossed cigarette butt in a haystack.

State leadership in promoting and organizing vocational guidance is highly to be desired, especially for the smaller districts that cannot employ experts in guidance. There are many guidance agencies—philanthropic, tax-supported, and those conducted for financial gain. The vocational teacher has distinct and important contributions to make toward making vocational guidance practical and more generally available.

QUESTIONS AND PROBLEMS

1. Is there danger in claiming too much for vocational guidance? Explain.

2. Who pioneered in vocational guidance in: (a) Boston; (b) New York; (c) Pittsburgh?

3. Describe the Junior Division of the United States Employment Service, indicating how it functions.

4. Name five public school systems that have each issued a number of "occupational studies."

5. How do you interpret: "Counseling should be undertaken seriously but not too seriously"?

6. Who was: (a) Frank Parsons; (b) Frederick J. Allen; (c) Eli W. Weaver?

7. Discuss the relationship of vocational guidance and vocational education.

8. What do you understand by "case studies"?

9. How do the ambitions of high school students as to vocational choice compare with what they will probably follow as vocations?

10. Distinguish between educational guidance and vocational guidance.

11. What kinds of training should be required of placement workers?

12. Should a public school placement office be open only during school hours? Explain.

13. What effect may be expected from compulsory state certification of guidance counselors?

14. What courses should constitute the minimum professional training requirements for counselors?

15. In what grade would you offer:

(a) A course in school opportunities?

(b) A course in occupations?

(c) Try-out courses in shopwork?

16. How would you start a program of vocational guidance in a small town?

17. Discuss the desirability of securing state aid for vocational guidance.

18. How are job specifications used by employment managers in industry?

19. Why is it difficult for young people today to obtain reliable vocational information directly from industry?

20. Submit a list of books on "occupations" that you consider suitable for boys of junior high school age.

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CHAPTER XXIII

INDUSTRIAL-TEACHER-TRAINING

Pioneer Days.—In discussing industrial-teacher-training it will be our purpose to pass over the annals of teacher-training as carried on in Continental Europe prior to the introduction of manual training in the United States, and furthermore to make but a passing reference to the early efforts in our own country. It will be remembered from the discussions in former chapters that the period from 1900 to 1917 was one of discussion and exploration with a changing emphasis upon the newer concepts of vocational education as an essential part of public education. Vocational-teacher-training in the now generally accepted meaning of that term, had its inception during those latter years. Pratt Institute, the State Normal and Training School, Oswego, N. Y., and Teachers' College, Columbia University, were among the pioneer institutions interested in helping to prepare the kinds of teachers that were needed to teach vocational industrial education in the secondary schools. With this brief reference to the pre-national period we shall scan the pages of the last decade and a half.

The National Act.—In accordance with the provisions of the National Vocational Education Act approved February 23, 1917, there is provided, for purposes of vocational-teacher-training, a sum of $1,000,000 annually to be allotted to the states in the proportion that their populations bear to the total population of the United States, not including outlying possessions.[1] So impressed were the framers of the act with the need for preparing vocational teachers that it was specified that the state shall provide a plan for training teachers and "that after June thirteenth, nineteen hundred and twenty, no state shall receive any appropriation for salaries of teachers, supervisors, or di-

[1] Vocational Education Act, (Public, No. 347, Sixty-fourth Congress).

rectors of agricultural subjects until it shall have taken advantage of at least the minimum amount appropriated for the training of teachers, supervisors, or directors of agricultural subjects."

The act further provides that at least the minimum amount allotted for teacher-training must be used annually for the purpose designated in order for a state to receive vocational education funds, that is, funds for the salaries of teachers of trade, home economics and industrial subjects.

Teacher-training done in accordance with the provisions of the national act must be "under the supervision of the state board" and the training must be given in "schools or classes under public supervision and control." The training thus made available, says the act, "shall be given only to persons who have had adequate vocational experience or contact in the line of work for which they are preparing themselves as teachers, supervisors or directors, or who are acquiring such experience or contact as a part of their training." In the state plans provisions are set up for those training teachers as well as standards for the various types of vocational teachers.

State Plans.—While certain minimum requirements governing industrial teacher training are contained in the basic national act, and are affected by rules and regulations based upon interpretations of the act, there still is provided much leeway for state and local initiative. The various states have a number of different ways of handling their industrial-teacher-training. These are not necessarily final in plan of organization, for through experience certain modifications are suggested and are put into effect. The differences in the plans of organization of industrial-teacher-training are to be explained largely in terms of varying conditions among the states. In the main these plans can be grouped in five groups, each of which will be discussed.

1. State Staff.—The first plan of teacher-training is that in which the training is given, in the main, by representatives of the state department working out of the state office. The New Jersey plan is of this type. Industrial-teacher-training is conducted, in the main, out of the state office at Trenton by one or

more members of the vocational education staff. The duties of the state supervisors of trade and industrial education, as briefly summarized in the state plan are: "(a) promotional, (b) inspectional, and (c) instructional."[2] It may be seen that these provisions allow considerable latitude and give a flexibility of function that enable the staff to divide their time between these various duties in any way that at the time may appear to be most desirable. In the case of New Jersey the size, topography and transportation facilities of the state are such that no excessive expense is incurred by this plan. In most instances the staff members can conduct in-service training courses and still get home over night—a situation quite impossible in many states.

There is every reason to believe that the plan is working out well in New Jersey. Special conferences are called to supplement the class instruction given by state men, and various specialists are called upon as occasion demands to supplement the state staff.

Among the advantages of the plan may be mentioned: (a) Close correlation between supervision and teacher-training; (b) economy of operation; (c) fixed responsibility for results; and (d) certainty that state department policies will be carried out.

Speaking now, not from the standpoint of the example given, but in general terms there may, under certain conditions, be disadvantages as well as advantages in this plan of giving teacher-training service. To illustrate, if the state is large or its transportation facilities such as to make it difficult or uneconomical to work out of one center, a modification may be advisable. Or if greater security of tenure or a larger staff or other advantages could be had by placing the teacher-training service in some offices or with agencies other than the state office that also would deserve consideration.

2. Using Several Centers.—A modification of the preceding plan is that in which representatives of the state staff are located in several centers, each situated so that it will serve a given

[2] New Jersey, State Board of Education. "Plans for the Administration of the Smith-Hughes Act for the Period 1927-1932." P. 33.

district. The men may be located in: (a) district offices maintained by the state; (b) district offices made available without expense to the state by city or county boards of education; and (c) district offices located at approved teacher-training institutions. In addition to economical operation there may be advantages growing out of cooperative relations that perhaps can be developed better through this plan than through the preceding one. Desirable uniformity of policies, of means and methods of operation, and unity of effort can be secured in part through conferences called for the staff in the field.

Illustrations of using different centers on the part of state representatives are found in a number of states. For instance, the state of New York maintains one or more field teacher-training representatives in New York City; in Ohio teacher-trainers are located at the University of Cincinnati, the University of Akron, and the University of Toledo; in Delaware the state teacher-trainer works out of Wilmington, the largest industrial center, rather than out of the capital; and in Wisconsin the University of Wisconsin, Madison, the Stout Institute, Menomonie, and the Oshkosh Normal are used.

3. Approved Institutions.—A somewhat different plan is followed by other states which delegate teacher-training to one or more approved institutions that are subject to state supervision and control in accordance with the requirements of the National Vocational Education Act. Thus California uses the University of California, Berkeley, and the University of Southern California, Los Angeles, as training centers; New York uses the Buffalo State Teachers College and the Oswego State Normal School; and Pennsylvania uses the University of Pennsylvania, the University of Pittsburgh and Pennsylvania State College. In the case of Pennsylvania it is uneconomical to try to conduct all industrial-teacher-training from one center and therefore the state has been divided into three sections—eastern, western and central—each of which is served, for purposes of industrial-teacher-training, by one of the approved institutions mentioned. Unnecessary duplication is avoided through this arrangement. In this case it has been possible, through and with the coopera-

tion of the approved teacher-training institutions, to build up a larger professional staff devoting its energies to industrial-teacher-training than probably could be maintained in the state office. The staff members, being free from the intermittent calls for special trips a state supervisor must take and from other demands, in meeting supervisory and administrative problems, can concentrate intensively on teacher-training service, which also has its advantages. The teacher-trainers are regularly appointed members of the respective university or college staffs, and are subject to the regulations and policies obtaining in them. They are also administratively responsible to the state department of public instruction, which approves the budgets, curriculums, and the teacher-training personnel.

For purposes of furthering coordination and for mutual helpfulness, teacher-training conferences are called. The teacher-trainers also participate in the annual vocational conference called for all types of vocational education and for all phases of vocational-teacher-training.

Members of the state department staff sometimes conduct courses and hold special conferences in connection with the summer session programs or other training programs held under the auspices of the approved teacher-training institutions. Other opportunities for cooperation between the supervisory and administrative staff of the state and the teacher-training staffs from the institutions are afforded by regional or district meetings called for vocational, practical arts and other specially designated groups of teachers, supervisors and directors.

In this as well as in all other plans of teacher-training there are possible unfavorable features that make it necessary to inquire carefully into the relative merits of this and other plans for any specific state before one can arrive at the conclusion of which plan is best. The fact that changes in plans have been put into effect in various states would seem to indicate that in these cases at least the first plans undertaken did not meet with entire satisfaction, or that changed conditions have demanded different plans of procedure.

4. Local Supervisors.—Beginning with July 1, 1926, federal teacher-training funds may be used to reimburse salaries paid to qualified local supervisors or directors who may conduct, in accordance with the regulations, in-service training for teachers. Local supervisors must at least meet the following minimum qualifications which are a part of the Federal Board rulings:[3] (a) He must have at least three years of practical trade or industrial experience; (b) he must have had a minimum of two years of successful teaching experience with trade preparatory or trade extension classes meeting the standards of the state plan for vocational education; (c) he must have had the equivalent of 180 clock-hours of approved professional training.

One of the largest programs of industrial-teacher-training conducted under local auspices at this time is being given by Robert H. Rodgers at the Milwaukee Vocational School. In some instances teacher-training given by local supervisors or directors is accredited at vocational-teacher-training institutions, as for instance in Virginia where the Virginia Polytechnic Institute will approve for credit such teacher-training courses upon the recommendation of the state supervisor of industrial education. In the matter of accrediting courses, a distinction is sometimes made between (a) giving credit for purposes of state certification only and (b) giving college credit toward a degree. A state department of public instruction may recognize teacher-training given by local supervisors or directors as meeting certification requirements, whereas approved teacher-training institutions may not be able to accept such courses for college credit.

5. Other Plans.—Under this general heading are included combinations of the preceding plans and variations of them. Teacher-training can also be organized on a county or a district system, as for example where the county unit plan of vocational education is in effect.

In addition to the efforts made under public supervision and control is also to be mentioned teacher-training service rendered

[3] Federal Board for Vocational Education. Bulletin 17, March, 1929, pp. 116-120.

by endowed colleges and universities, such as Columbia University, Harvard University, New York University, Chicago University and others. Supplementing the regularly constituted industrial-teacher-training agencies are other educational institutions, as for instance technical schools of college grade, liberal arts colleges and teachers' colleges that give certain professional courses like educational psychology, educational sociology, and basic courses in economics, labor problems, shop, drafting and science courses, all of which may be accepted as meeting, in part, the professional and the "content" or "subject matter" courses required of trade and industrial teachers and of teachers of the related subjects.

Qualifications of Teacher-Trainers.—The two most important factors in determining the standards of professional preparation of trade and industrial teachers in the United States are: (1) The minimum requirements set forth by the Federal Board for Vocational Education, and (2) the minimum requirements written into the various state plans for vocational education. In establishing minimum standards there must be considered what will constitute high standards on the one hand and attainable standards on the other hand. The minimum standards must be low enough so that all states can meet them; the higher standards are sometimes developed through legislative action specifying that the present standards are to be raised at certain future dates, in the meantime giving advance notice so that preparations can be made accordingly. Another method is to issue sub-standard, temporary standard and permanent certificates, each representing higher requirements, and attaching limitations to sub-standard certificates, while additional state aid may be paid as reimbursement upon salaries of teachers holding the higher forms of certificates.

It is to be regretted that too often the minimum standards set up by the Federal Board are accepted as the standard for the state, and the minimum standards found in the state plan are taken as the standard in the programs established by municipalities or school districts within such state. A little analysis would show that in all probability the minimum stand-

ards should be exceeded in many cases. In spite of a certain tendency to follow minimum standards there appears to be a rather general raise in standards for both teachers and teacher-trainers. The minimum qualifications for teacher-trainers established by the Federal Board for Vocational Education for persons appointed after June 30, 1926, are as follows:[4]

1. Trade experience.—At least three years' practical working experience in a trade or industrial occupation.

2. Teaching experience.—At least two years of successful experience with approved trade preparatory or trade extension classes.

3. Supervisory experience.—At least three years of experience in an administrative or supervisory capacity in trade or industrial education of vocational grade.

4. Professional training.—The equivalent of 540 clock hours in approved subjects.

Types of Service.—Industrial-teacher-training service is made available through the following types of courses:

1. Full-time.—The full-time courses conducted through teacher-training institutions are taken, in the main, by the younger group, most of whom have not yet entered the teaching profession, and who are not yet married. Recognizing the difficulty of attracting expert craftsmen to such courses without special inducements, the state of New York issues a number of scholarships that materially help mature men to take such training. The full-time curriculums are usually from two to four years in length. In the former case they are planned to meet standard certification requirements and the learner is urged to continue his professional training through various forms of in-service training. In the case of the four-year curriculums the learner should have sufficient trade experience by the time he graduates to meet the requirements set up for teaching either shopwork or related subjects on a vocational basis.

The full-time teacher-training curriculum is in many in-

[4] Federal Board for Vocational Education, Bulletin 17, "Trade and Industrial Education." Pp. 122-123, March, 1929.

stances better suited to train related subjects teachers, who do not need as much practical industrial experience, than it is to train shop teachers, for the teacher-training institutions can give the necessary technical courses to better advantage than they can give trade training.

2. Part-Time.—Part-time instruction is pursued primarily by teachers in service. Instruction is given during the late afternoon or on Saturday when the public schools are not in session. Occasionally a few persons who have not yet entered the teaching profession are able to attend such classes. Part-time classes are given in the form of campus courses and also as extension courses under the auspices of state departments of public instruction, by teacher-training institutions and by local supervisors or directors.

In some respects part-time and evening classes should prove more valuable, hour for hour, than full-time pre-employment training, since the part-time groups have a background of teaching experience that intensifies the desire to learn and that motivates the class discussions. The part-time groups also have a more appreciative understanding of what is taught.

3. Evening.—If we may be permitted to generalize on the basis of our limited experience and observation it is to say that in general evening classes are less satisfactory than part-time classes held during the daytime. Most people are more fatigued in the evening and it requires greater effort on their part to accomplish the same results that can be attained in the same number of hours during the day. This applies to teacher-trainers just as well as to teachers enrolled in such courses. But in many instances evening classes are the only ones that can be held or are the only ones that certain employed persons can attend. This is particularly true of tradesmen working at their trade who wish to prepare themselves professionally for teaching. Two or three years of professional training taken in evening classes plus an intensive summer session course of six weeks will ordinarily qualify a man having adequate trade experience and a fair background of general education to meet

the minimum certification requirements now in force for teaching shopwork on a vocational basis.

4. Summer Session.—There are several groups of learners for whom the summer session courses offer special opportunities. Among these are: (a) Teachers in service who are not employed during the summer months; (b) tradesmen who can arrange to devote six weeks or so to full-time study; (c) regular full-time students who, because of special ability or previous experience or both, can complete their requirements by substituting a summer session for a full semester; (d) full-time students who can get in the summer session courses not available during the regular year.

Summer session courses also are popular because of the unusual opportunity afforded students to become personally acquainted with many persons engaged in the same profession, and having similar interests and ideals. The various points of view presented by summer session students, reflecting as they do, various experiences, are most stimulating.

5. Correspondence.—University extension training through the correspondence method dates back, in England, to 1867 and languages were taught by correspondence in Berlin in 1856.[5] At present correspondence courses are given under public, quasi-public and private auspices. It is rather generally admitted that courses completed by correspondence or home study may be of great value. At the same time there is a reluctance on the part of many colleges to accept such courses in partial fulfillment of curriculum requirements leading to a degree. Some teacher-training institutions and some state departments of education will accept correspondence courses completed under their own auspices and control. The objection to correspondence instruction from a certification standpoint appears to hinge largely upon the assumption that they are hard to evaluate. There is no doubt about the fact that such courses have sometimes been poorly given and that it requires more effort to satisfactorily complete high-grade correspondence courses of the type

[5] Noffsinger, John S., "Correspondence Schools, Lyceums, Chautauquas." Pp. 3-4, The Macmillan Company, 1926.

that are worthy of recognition toward teacher certification and degree requirements than it does to take equivalent training through class instruction. May it not be that the most equitable solution to the question of whether or not correspondence courses shall or shall not be accepted in place of residence or extension instruction for the preparation of teachers will lie in the direction of establishing definite and satisfactory standards, of giving approval based in each case upon a thorough knowledge of the content of the courses, the instructional personnel, and the ways and means used in giving the courses and in checking accomplishment in them, rather than to pursue the easier method of refusing to recognize all such courses because some do not come up to the requirements?

It has been said that one difficulty with correspondence instruction is to know whether or not a man actually does the work himself. At least one teacher-training institution that accepts a limited number of correspondence credits toward degree requirements checks on this matter by requiring final written examinations to be taken under the auspices of public school officials in the place where the student resides. A limited number of correspondence courses are being conducted, in the case mentioned, in accordance with the regulations of the state plan for vocational education. They are taken by prospective trade and industrial teachers and by teachers in service located in small places where resident and extension courses are not available. A number of the persons taking these courses are superintendents in industry—college men, some of them—who give highly specialized trade or industrial courses under public auspices. These men are interested primarily in being of service to the men under their supervision; they could not leave their regular employment to take other forms of professional training.

Types of Learners.—Persons taking industrial-teacher-training courses may be divided into two groups on the basis of employment: (1) The "pre-employment" or "pre-service" group composed of persons who have not yet entered upon vocational teaching and who are preparing to do so; and (2) the "in-service" group or those who are employed as teachers of

trade or industrial education. Another classification is as follows:

1. Vocational teachers:
   (a) Shop or "practice of the trade" teachers.
   (b) Related subjects teachers.
2. Prospective vocational teachers.
3. Non-vocational teachers.

It is sometimes overlooked that the term "vocational teachers" as used in the field of trade and industrial education refers to two groups: (a) trade teachers and (b) related subjects teachers. In some instances the shop teacher is also qualified to teach the related subjects, such as related mathematics, drafting, science, and trade theory.

Classification of Courses.—Teacher-training courses are for convenience classified as follows:

1. Professional.—By "professional" courses are meant those that have to do with the art and science of teaching as, for instance, "Methods of Industrial Education," "Course of Study and Curriculum Construction," "Educational Psychology," and "Educational Sociology."

2. Subject Matter.—Under the heading come "content" courses, such as shop courses, mathematics, the physical sciences, the social sciences and other courses taught without reference to how the student would teach them.

3. Professionalized Subject Matter.—When the art and science of teaching is emphasized in what would otherwise be content courses, the purpose being to teach both content and professional aspects in the same course, the term "professionalized subject matter course" or simply "professionalized course" is used. Dr. Bagley and others are strongly in favor of professionalizing subject matter courses whereas others prefer to have professional courses given independently of "content courses." A practical objection that has been raised to the professionalized courses is that the instructors who are most expert in certain of the content courses may not be qualified to professionalize them either on the basis of training or interest

in desiring to do it. An example of desirable types of professionalized courses are courses in shopwork and drawing in which the instructor points out the teaching problems and how to meet them.

The Professional Aspect.—In a study entitled: "Determination of a Core Curriculum Leading to the Baccalaureate Degree in Industrial Education," Charles P. Scott has shown that there is much variation among the states in the matter of the professional training required to meet either standard certification requirements or to qualify for a degree in industrial education.[6] Several factors that make it difficult to give an exact and accurate appraisal of teacher-training as carried on in the various states include: (1) Lack of uniformity in terminology; (2) lack of complete descriptions of entrance requirements, pre-requisites, length of time conducted and credits allowed; difficulty in determining what proportion of a professionalized course is professional training and what is subject matter training; difficulty in determining whether certain requirements are for all-day trade and industrial teachers only or also for part-time and evening teachers.

Not only is there great variation between the total number of semester-hours of professional training required but also in the kinds of courses required. It is probable that the actual content, in the main, varies less than might be assumed on the basis of the names or titles given to the courses.

The purpose of professional courses is the same whether they are given in a two-year curriculum or in a four-year curriculum and the same whether they are for full-time or for part-time teachers. But in view of the fact that the teaching requirements are quite different in all-day, part-time and evening schools, not to mention the courses within each of these types of schools, it follows that the professional requirements must be drawn up in the light of all available information about each phase of

[6] Scott, Charles Palmer, in an unpublished thesis submitted for the degree of Master of Science in Industrial Education, at Pennsylvania State College, August, 1929.

vocational education, and professional courses must be differentiated for the various forms of vocational teacher training.

A Four-Year Curriculum.—The four-year curriculum in industrial education leading to standard certification and to the degree of Bachelor of Science in Industrial Education, as given at Pennsylvania State College, involves the completion of 130 semester-hours of instruction distributed as follows:

	Semester-Hours
General education	29
Shop and related subjects	41
Professional education	36
Electives	24

The professional education subjects specifically required are:

	Semester-Hours
Psychology, general	3
Psychology, educational	3
Introduction to teaching	3
Educational measurements	3
Principles of industrial education	2
Industrial materials	2
Special methods in industrial education	2
Vocational guidance	2
Shop layout and equipment	2
Observation and practice teaching	6
Curriculum and course of study building	2
Special methods, advanced	2
Industrial occupations	2
Organization and administration of continuation schools	2

At the University of Pittsburgh the four-year curriculum in industrial education is made up for shop teachers as follows:

	Semester-Hours
General education	34
Professional education	28
Vocational education	32
Related science and art	15
Electives	11

The University of Pittsburgh also gives credit for practical trade experience and for teaching experience as was explained for Pennsylvania State College.

The Two-Year Curriculum.—Both of the preceding institutions have approved two-year curriculums for industrial teachers. They are intended especially for men with practical experience who wish to meet standard certification requirements without meeting the conditions set up for the degree-granting curriculums. The two-year curriculums are so arranged that they will fit into the four-year curriculums in order that there will be no lost effort when working toward a degree in industrial education.

The University of Pennsylvania. Industrial-teacher-training is conducted at the University of Pennsylvania in accordance with the same state plan for teacher-training under which the University of Pittsburgh and the Pennsylvania State College operate. Being located in Philadelphia in a large metropolitan and industrial district, the University of Pennsylvania is well situated to attract to campus courses both tradesmen preparing to teach and also vocational teachers in service. Professor Wm. C. Ash, for many years widely known as the director of vocational education and of practical arts in the city of Philadelphia, resigned that position shortly after the National Vocational Education Act went into effect in order to organize the Department of Vocational Teacher Training at the University of Pennsylvania. The latter institution conducts, under his direction, both residence and extension industrial-teacher-training courses.

Related Subjects Teachers.—Modifications are made in the curriculums as outlined for shop teachers in case the aim is to prepare for teaching the related subjects. Less shop training and more "related" training is given. In Pennsylvania a teacher of related subjects must have had 12 semester-hours of approved post-high school training in the subject he wishes to teach as, for instance, mathematics or science. This is soon to be raised to 18 semester-hours.

Part-Time Continuation Teachers.—The professional training given to part-time continuation teachers should clearly reflect the educational needs in the field, which is quite different from that of the all-day industrial school. Where small continuation schools are common, as is the case in a number of states, special attention must be given to the one-teacher continuation school. The problems in such a school are quite different from those to be found in the larger city continuation schools having departmentalized instruction, a rich curriculum, adequate housing and well-trained and experienced teachers.

Ohio Requirements.—The trade qualifications under the Ohio State Plan for Vocational Education for shop teachers are:[7]

1. Age—22 to 40 except in evening schools, which are 22 to 50 years.

2. General education.—Two years of high school or equivalent except in evening schools, where the requirement is completion of the eighth grade.

3. Professional education.—Thirty-two hours of instruction for each of two years, and 64 hours for each of two succeeding years, totaling 192 hours. This is equivalent to 12 semester-hours. These training courses may be secured through resident summer session courses, evening courses, and through intensive short unit courses. The courses may be offered either by designated institutions approved by the state board for vocational education, or by the board directly. A list of the required courses follows:

1. Occupational analysis.
2. Organization of instructional material.
3. Methods of teaching occupational subjects.
4. Organization and administration of vocational education.
5. Shop management.
6. Practice teaching.

Observation and practice teaching is given under local supervision.

[7] Ohio State Plan for Vocational Education, 1927. P. 51-53.

New Jersey Requirements.[8]—For shop teachers the entrance age is between 21 and 42 years. The general education requirement is "equivalent to eighth grade education." At least six years of successful experience, or the equivalent in the trade which is to be taught is required.

Pre-service training, with the exception of certain summer school work, will not be given, under the New Jersey State Plan for Vocational Education, at any institution but is organized as extension work conducted by the state staff at various centers. The minimum number of unit hours of pre-service training is 360 clock-hours. There herewith follows a list of the courses of study:

First Year

	Sessions
(1) Vocational education—aims—terminology—state and federal requirements	1–2
(2) Observation of work in school	10
Reports and discussion of observation	10
Practice teaching and conferences	10–20
(3) Analysis of trades	6
(4) Pupil characteristics, study of individual differences	3–7
(5) Classification of jobs and trade knowledge	1–2
(6) Determination of trade units or blocks	2–4
(7) Identification of progression factors	2–4
(8) Interest and interest factors	1–3
(9) Discipline	1–3
(10) Related work and non-related work	1–2
(11) Teaching steps	1–3
(12) Lesson planning (shop subjects, related subjects)	6–12
(13) Requirements for a successful teacher	1–2

Second Year

(1) Lesson planning, practice teaching, discussion	40–50
(2) Observation and discussion	10–20

Third Year

(1) Trade mathematics—trade science	15
(2) Trade drawing or shop practice	15
(3) Elementary psychology	15
(4) School shop management	15

[8] New Jersey, State Board of Education. "Plans for the Administration of the Smith-Hughes Act for the Period 1927-1932," pp. 50-52.

The Scientific Trend.—From the standpoint of basic sciences involved in the profession, teacher-training appears to be where medicine and engineering were a couple of decades ago. We are, in education, still largely in the pre-scientific stage. This is no doubt due in part to the fact that the social sciences and the sciences through which educational practice seeks its justification, namely, educational psychology and educational sociology, are less objective than the physical sciences like chemistry and physics. It is therefore more difficult to prove that a given educational procedure is either superior or inferior to another. Then, too, biological, sociological and psychological phenomena are harder to control than those in the realm of the physical sciences.

Among the outstanding tendencies of education today there is evident a widespread interest in substituting exact knowledge for guesswork; there is a universal desire on the part of progressive educators to base educational practices upon known bodies of facts. Toward this end job analyses are made, and support is given to developing tests and measurements that are superior to rule of thumb procedures. Familiarity with statistical methods and with tests and measurements and other techniques is necessary for constructive, practical, research work. Industry itself finds it necessary to foster scientific research. It is just as essential to the development of trade and industrial education. There are many practical problems in trade and industrial education that can best be solved by the teachers themselves. Therefore training in scientific research should not be limited to specialists and supervisory, administrative or research workers. In addition to those who directly contribute toward research there is a still larger group who would be benefited by having an understanding of the techniques involved in order that the results, such as tests and measurements, can be used intelligently by them.

Marginal Training.—Between trade experience and technical or subject matter courses on the one hand and professional courses on the other there is an appreciable body of experience, of skill and of knowledge that may be termed "marginal." A

teacher should by all means possess a wide margin of skill, of technical knowledge, of general education and of culture above and beyond what he can reasonably require of his pupils. For that reason teacher-training curriculums should not be limited to the bare essentials that must be taught, but should include considerable of this marginal education. The latter can be so selected that it will prove stimulating, broadening, liberalizing, democratizing and professionalizing. There is just as much danger, it would appear, in emphasizing in teacher-training curriculums narrow technical training given to the exclusion of liberalizing education as there is in advocating general education to the exclusion of specific vocational education.

Personal Qualifications.—In selecting trade and industrial teachers certain definite requirements are set up for trade experience, technical training and general education. There is another group of qualifications more difficult to define and harder to measure, but just as essential to professional success. These are the ones usually designated as "personal" factors. They include appearance, bearing, judgment, character, cooperativeness, initiative, leadership ability and the like. In discussing this phase of teacher qualifications Robert O. Small has pointed out that the teacher must respect his profession, he must respect his pupils, he must himself be teachable, he must be sincere, sympathetic, patient, and steadfast.[9]

There rests upon those responsible for teacher-training the task of assisting in the development of desirable personal qualities in prospective teachers and the question has been raised whether or not a teacher-training agency should place its stamp of approval upon persons otherwise qualified but evidently lacking in personal qualifications essential to teaching.

Sources of Teachers.—In considering programs for purposes of training industrial teachers it is necessary to know from what sources the men are drawn and something of their qualifications for teaching. In discussing this topic the fol-

[9] Small, Robert O., "The Qualifications of a Successful Teacher in a Full-Time Vocational School or Class." *Proceedings*, A.V.A., Bulletin No. 2, 1928, p. 100.

lowing three classifications will be used: (1) shop teachers; (2) related subjects teachers; and (3) non-vocational teachers. In each classification there may be all-day, part-time and evening school teachers.

1. Shop teachers.—In view of the general requirement found in state plans for vocational education that trade and industrial teachers must have six years or more of trade experience to teach the shop or "practical" courses it is to be expected, even allowing for certain equivalents that may be recognized, that the shop teachers are men who have had good industrial experience. In the past it is possible that in some instances more freedom has been used than is now wise in the matter of accepting equivalents for both general education and practical working experience in industry. It is probable that in some instances not sufficient inquiry was made as to the exact nature and quality of the trade experience that the prospective teachers offered in partial fulfillment of entrance or certification requirements but those things are now being watched more carefully.

Some shop teachers are drawn directly from industry and their training, with the exception of occasional correspondence or evening school courses that they may have taken, was received through apprenticeship and employment. Others have the same kind of a background with the addition of trade or technical training, or both, received in technical schools, trade schools, and colleges. Still others have in addition to this a certain amount of professional training that may have been obtained through residence, or extension classes, while they still were following their trade. It is desirable to anticipate developments of industrial education, to induce competent craftsmen to enroll in teacher-training courses given during evening or leisure hours so that when additional classes are opened they will be in charge of men who have the necessary qualifications.

A limited number of shop teachers are drawn directly or indirectly from trade schools, technical schools and colleges, such as the Williamson Free School of Mechanical Trades, the Worcester Trade School, the David Rankin Junior School of Me-

chanical Trades, the William Hood Dunwoody Institute, Carnegie Institute and Wentworth Institute.

Professor Diamond and Dr. Myers have shown that in Michigan, contrary to the idea generally prevalent that trade and industrial teachers are weak in general education, 43.6 per cent of the industrial teachers have degrees from institutions of college grade.[10] Their figures, it appears, are based upon teachers getting Smith-Hughes aid—not shop teachers alone. It would be interesting to know what proportion of the trade teachers are drawn directly from industry and what proportion of those teaching shopwork on a vocational basis are graduates of technical schools of college grade. The proportion of the latter is no doubt small.

Shop teachers in the evening schools are drawn, in the main, from the ranks of those teaching in day schools and from industry. In the part-time general continuation schools they are drawn primarily from the all-day schools, whereas part-time trade extension training is frequently in the hands of instructors drawn from industry and preferably after having had some pre-employment training of a professional nature.

2. Related Subjects Teachers.—The related subjects have been successfully taught, under public school conditions, by practical shop men and by technically trained men. In either case it is necessary that the person have acquaintanceship with industrial needs as they exist in specific occupations, and that they possess technical and professional training to develop instructional material. Owing to the type of training usually given in technical schools, graduates of such institutions should have little difficulty in developing, in cooperation with practical tradesmen, very desirable instructional material.

There are several practical objections to having shop teachers handle the related subjects other than certain applied aspects that naturally should be taught on the job. The first is that if a shop teacher spends half time in shop instruction and half

[10] Diamond, Thomas, and Myers, George E. "Report on Smith-Hughes Teachers of Industrial and Part-Time School Subjects in Michigan," in Michigan Vocational News Bulletin, Vol. VI, No. 2—Nov.-Dec., 1928. P. 2.

time or approximately that in teaching related subjects a choice will have to be made between having his shop stand idle half of the time or two teachers will have to share the shop on the basis of successive half days. Neither of these alternatives are entirely satisfactory. This statement of conditions applies to the all-day school, and not to cooperative education. Rather than alternate one shop on a half-day basis most teachers would prefer to have one man handle the shopwork and another the related subjects.

One of the serious limitations to effective related subjects instruction has been to get teachers who know the specific requirements of the various industrial occupations for which the school seeks to give supplemental training, and then who are familiar with the technique and who have the perseverance necessary to develop functioning instructional material. Without question one of the outstanding needs today is for better related subjects instruction. One can easily find five teachers who can handle shopwork satisfactorily to one who can put over a first-class job in teaching related mathematics, or science that is in reality related to the trades and occupations for which the learners are preparing. Related drafting is more commonly taught in a satisfactory way.

3. Non-Vocational Teachers.—The teachers of the non-vocational, "general" or "academic" subjects are usually drawn from teacher-training institutions and colleges. It is primarily with part-time continuation, part-time trade preparatory and trade extension, and evening school students that the teaching techniques and the subject matter in non-vocational courses may need to be modified from that ordinarily presented in the all-day schools. To this end it is necessary that teachers of non-vocational subjects must understand the social and economic conditions of their pupils, and that the course contents must be determined in part on the basis of the length of the pupils' probable school attendance.

Stimulating Professional Growth.—In some states as well as in certain cities or school districts promotion and other rewards, such as salary increases, are made to depend upon evi-

dences of professional advancement. Michigan rates its vocational teachers and issues certificates of "A," "B," "C" and "T" grades, each representing a different standard of professional training. In 1928, with 56 per cent of the teachers reporting, 11.6 per cent had ratings of "A," 44.9 per cent had "B," 19.6 per cent had "C" and 6.5 per cent had "T."[11]

The accompanying form of report is used by one city that requires one of several forms of professional improvement as a basis for salary increases:

REPORT ON ACTIVITIES

Altoona School District

.....Teacher July 1, 19 to July 1, 19

In addition to a satisfactory rating, completion of one of the following is necessary in order to receive the salary increment provided in the school law.

1. Completion of work in extension or summer classes sufficient to secure 2 college credits. 2. Completion of correspondence courses sufficient to secure 2 college credits. 3. Travel with a duration of at least 2 weeks and embracing a total mileage of at least 500 miles—one trip, non-business. 4. Completion of a course given or arranged for by the superintendent. 5. The reading of 4 books—one pedagogical, one from realms of history, travel or biography, two possibly fiction, with a criticism of at least 75 words on one of them.

REPORT ON CREDITS

Between the dates ..... and ..... I pursued .... courses and secured ..... credits for which proper certificate is presented.

.....Signature

REPORT ON TRAVEL

Between the dates ..... and ..... I traveled from .... to ..... covering at least ..... miles and spending ..... days.

.....Signature

REPORT ON READING

I hereby report the reading of 4 books as follows:

	TITLE	AUTHOR
..... to	.....	.....
..... to	.....	.....
..... to	.....	.....
..... to	.....	.....

For criticism see rear. .....Signature

[11] *Ibid.*, p. 1.

State Scholarship.—In 1920 the state of New York enacted an industrial scholarship law. In accordance with its provisions $50,000 was made available for 25 scholarships of $2000 each to properly qualified persons, as maintenance and support while enrolled in the teacher-training department of the New York State Teachers College at Buffalo.[12] The industrial scholarship law was later modified by reducing the amount of the scholarships from $2000 to $1000 each and the total amount available from $50,000 to $25,000. An amendment was also passed so that women applicants could be considered.

The original law was sponsored by the state federation of labor and was modified at the suggestion of the state education department. The act has attracted national attention. It enables mature men with excellent vocational experience to pursue professional training that might otherwise not be within their reach. The entrance requirements as described by Eugene D. Fink, state supervisor of industrial-teacher-training, are:

1. Trade and industrial experience.—Men must have had five years or more of journeymen experience in a trade, industrial or technical occupation. Women must have had five years' experience of which not more than one shall have been as an apprentice.

2. Education.—Satisfactory completion of the work of the eighth grade and one full year of work in an approved high school or its equivalent. (Architectural and mechanical draftsmen must be high school graduates.)

3. Age. Men should preferably be not less than 23 or more than 38 years of age. Women should be not less than 21 or more than 35 years of age.

4. Citizenship and residence.—A citizen of the United States and a resident of the State of New York for one year, preceding date of application.

5. Health and character.—Of good moral character and in possession of good health.

Publicity is given through circulars which are sent to employers, labor organizations, to schools and to the press. Many more applications are received than can be approved for scholar-

[12] Fink, Eugene D. "New York State Industrial Scholarship" in *A.V.A. News Bulletin*, Vol. IV, No. 3. Pp. 35-36, Aug. 1929.

ship. Holders of scholarships are in strong demand. Eighty per cent of those who have completed the training are teaching.

Observation and Practice Teaching.—It is generally recognized that observation and practice teaching are essential preemployment requirements for teachers, both general and vocational. In the case of prospective teachers graduating from full-time curriculums in approved teacher-training institutions it is a relatively easy matter to provide these experiences in a satisfactory way. But it is not so easy to provide such instruction prior to employment, or even during employment, in the case of mature adults drawn into the teaching profession directly from industry. Some states require two semester-hours of observation and practice teaching, and sometimes more are required for standard certification. In some instances it has seemed wise to employ trade and industrial teachers without previous professional training of any kind, and to require them to get it on an in-service basis. For instance, one state recognizes three years of teaching experience, under supervision and in the public schools, as the equivalent of the observation and practice teaching requirement set up for trade and industrial teachers.

It is most important that observation and practice teaching shall be given under practical conditions corresponding to those to be met by the prospective teacher. Thus the observation of college classes will not meet the requirement for teachers of secondary vocational education, and observation and practice teaching carried on in evening schools and classes, though ideal for evening-school teachers, is not entirely satisfactory for day-school teachers because the teaching conditions are different. Neither is it entirely satisfactory always to have observation and practice teaching given by local supervisors or directors of vocational education.

It is highly desirable to conduct observation and practice teaching in accordance with carefully developed plans, preferably set forth in written form, drawn up between the teacher-training institution or agency and the school district that is to provide the training. These plans should clearly show the plan

of procedure, the personnel involved, the nature and amount of training to be given, and the compensation to be paid. Observations should be made after preliminary instructions have been given, and should involve written reports on the part of the student-teacher.

For purposes of practice teaching not more than one learner should be assigned to a critic teacher, and the procedure to be followed by the latter must be worked out in advance. Practice teaching in the shop or manipulative work must be arranged differently than practice teaching where group instruction is followed. The student-teacher who seeks to get his practice teaching in a machine shop, for instance, will find perhaps twenty pupils, each working at something different, and on jobs many of which have been pursued for a number of days. Each job must be studied individually before the student-teacher can take charge or have supervision of it.

Summary.—Industrial-teacher-training in the United States has developed largely out of and with the assistance of the provisions of the National Vocational Education Act which has placed it on a permissive mandatory basis. The various states have a number of ways of making teacher-training service available: (a) through state department staffs; (b) through designated teacher-training institutions; and (c) through combination of these. Local supervisors may also do teacher-training work in accordance with procedures set up in the state plans for vocational-teacher-training in states where the latter so provides.

The qualifications for teacher-trainers are set forth in state legislation in accordance with the following: (1) general education; (2) trade experience; (3) teaching experience; and (4) professional training. It is important to keep in mind the points of departure as well as the similarity in the professional requirements for the various types of trade and industrial teachers, namely, those preparing for evening, part-time and full-time schools or classes. It is furthermore essential to differentiate between the needs of shop teachers and those teaching the related subjects.

On the basis of the experience of the last dozen years we

are able to re-define our objectives, to evaluate curriculums that have been used; to revise techniques employed and to determine minimum essentials, desirable standards and a suitable instructional order. The time has come to think less in terms of merely meeting minimum standards and more in terms of higher and more adequate ones. In vocational as well as in general education there is a widespread tendency to raise the professional requirements for teaching. There is a place for broadening, liberalizing instruction, for courses dealing with social economic aspects and for instruction giving historical illuminations as well as for the so-called "technical" and "practical" courses for vocational teachers. In our eagerness to show the need for specialized, differentiated instruction preparing definitely for vocational education we have sometimes neglected to mention that a well balanced education is after all the ideal one.

Plans for the professional preparation and improvement of teachers must reflect consideration of the absorbing power and of the financial ability of the community and the state. It is relatively easy to diagnose educational needs; it is much more difficult, but just as essential a matter, to determine the economic ability to pay.

QUESTIONS AND PROBLEMS

1. What advantages, if any, are there in granting college credit toward degrees as well as credit toward standard certification for professional improvement courses for teachers?

2. What advantages are there in having industrial-teacher-training conducted under the auspices of local supervisors or directors of vocational education? What possible disadvantages?

3. Is it desirable to grant college credit for such professional training?

4. Should the professional requirement for local supervisors or directors giving teacher-training courses be the same as for state supervisors or representatives of approved teacher-training institutions doing similar teacher-training?

5. Distinguish between a "professional" course and a "professionalized" one.

6. What professional course should be taught first to prospective trade teachers: (a) employed in industry; (b) attending teacher training institutions on a full-time basis?

7. In general, are student-teachers getting practice teaching an asset or a liability to the regular teacher handling the class?

8. What should be our attitude toward correspondence courses?

9. What is a reasonable amount of professional improvement to be required of teachers holding sub-standard certificates in:

(1) Evening schools or classes?

(2) Part-time schools or classes?

(3) Full-time schools or classes?

10. Arrange the professional courses required for standard certification in your state in what you consider to be the best teaching order.

11. Compare the relative merits of taking professional training through extension and summer session.

12. Who should rate industrial teachers in service for purposes of determining their ability?

13. To what extent is it desirable to standardize industrial-teacher-training on a state basis? On a regional basis?

14. Where can observation and practice teaching for industrial teachers be effectively given in summer sessions?

15. What professional courses required of trade and industrial teachers may best be given on the basis of: (a) mixed groups; (b) limited mixed groups; (c) trade groups?

16. Make a list of effective methods of recruiting qualified persons for pre-employment industrial-teacher-training classes.

17. Discuss the relative effectiveness of pre-employment and in-service teacher-training for trade and industrial teachers.

18. Suggest a procedure for determining the professional requirements for trade and industrial teachers.

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Note: See also the "State Plan for Vocational Education" as issued by the state board for vocational education in various states.

CHAPTER XXIV

CERTIFICATION OF INDUSTRIAL TEACHERS

A Development.—In the field of general education the procedure of certifying teachers has in many instances taken the following successive steps: (1) Local school directors examined the prospective teachers; (2) county superintendents of schools held examinations and issued certificates; (3) district superintendents conducted examinations and licensed teachers; and (4) state certification was evolved.

Vocational education being more recently introduced has not been subject to the evolutionary process just mentioned, with the result that the means and methods of certification are more modern than some just mentioned.

A State Function.—It has already been pointed out in an earlier chapter that although the national government has certain rights and inherent interests in education as is exemplified by various national grants in aid of education it still remains true that education is a state function, and also that in such matters as establishing standards for various forms of education and in certifying or licensing teachers there cannot be local or municipal control except as the state through its appointed representatives sees fit to grant such privileges. The advantages of having at least state-wide uniformity in certification requirements are so well-known as not to require defense. Very wisely, however, the states have seen fit to modify this general procedure in certain ways by delegating certain certification privileges to local communities. In exercising these delegated functions definite restrictions are imposed with the objective of protecting the best interest of the state. To illustrate this point, one state permits its cities having a population of 500,000 or more to issue their own licenses, but they must at least equal the state standard. The same state also allows district and county superintendents to issue "emergency" certificates but

the granting of these is carefully circumscribed with regulations seeking to protect the best interests of both the community and the state.

Importance of Certification.—A license to teach is a protective device issued for the same purpose as a license is granted to the stationary engineer, the druggist, or the lawyer. Where private and public welfare is involved it is but reasonable that there should be public control. Public policy demands that action in matters of common concern should be taken impersonally, impartially and uniformly with respect to each type of case; action must be free of personal favoritism and must be on a professional level. Before standard certification based upon actual accomplishment standards was put into effect the political and other pressure that was sometimes brought upon school executives and members of boards of education was tremendous. With state certification the matter has been made as impersonal as possible—not that state certification officials are entirely free from the pressure brought upon them by friends as well as by strangers.

The fundamental importance of having definite certification requirements and of enforcing these requirements impartially needs no justification but is mentioned for the sake of emphasis. In simple justice to the learners young and old, to those in the teaching profession and to the taxpayers who foot the bill, there must, at all costs, be uniformity of standards and of procedure in licensing teachers. The primary purpose of teacher certification is to protect the rights of learners, be they children, youth or adult; incidentally it also protects those in the profession and society at large.

Absolute and Discretionary Standards.—Teachers' licenses are usually issued in accordance with certain very definite, fixed or absolute standards as well as in accordance with additional discretionary ones. For instance, note the following requirements for the teacher of practical trade work as set up by the State of California:[1]

[1] University of California, Division of Vocational Education. "A Circular of information for qualified persons from the trades and technical occupations who desire to become vocational teachers," 1928, p. 8.

GENERAL REQUIREMENTS FOR THE TEACHER OF PRACTICAL TRADE WORK

(a) Credentials for full-time instruction will be granted only to persons between twenty-four and forty-five years of age, who are of good moral character, of good health, and without physical defect which would impair their fitness for the teaching service.

(b) Applicants must have completed at least two years of schooling beyond the eighth year of the elementary school course; and will be required to pass examinations in oral and written English composition, in civic and general information, and in the trade or industrial occupation for which the credential is desired.

(c) Applicants must verify (by original letters from employers) three years of experience as journeymen workers, based upon apprenticeship training or its equivalent, or—where this terminology does not apply—its equivalent in the vocations they are preparing to teach.

(d) Applicants must have been working in the trade or industrial occupations as journeymen workers for at least one year during the past three years.

In the preceding example such matters as age, and elementary schooling are absolute and mandatory requirements, whereas the following phrase found in paragraph "(c)": "three years of experience as journeyman workers, based upon apprenticeship training or its equivalent" does allow discretion in interpretation.

When certification standards are first put into effect and no one knows positively whether or not the standards set up are such that a sufficient number of persons can meet them it has often relieved the situation to insert clauses into the basic law that give the certifying agency discretionary powers. For instance the requirement may read "high school graduation or equivalent." It is then up to the proper official to decide just what equivalent will be allowed unless, perchance, the equivalents are enumerated. But otherwise he would use his judgment. If more teachers are needed than would be available through a strict enforcement of the "equivalent" he may be inclined to ease up a bit in interpreting the word.

State plans for vocational education have now been in force long enough so that it is fairly well known what certification

standards are possible of enforcement and which ones are not. We have come to the place where the professional training requirements can be clearly outlined, thus assisting the prospective teacher materially in determining what courses he will take. Evidently certain courses are more essential than others as a means of meeting minimum requirements.

There are at least two schools of thought with reference to this point. The one holds that standards should be set forth in detail indicating courses that are required and others that may be elected. This has the distinct advantage of definiteness in requirements. In case other courses have been completed there is still the opportunity to evaluate them and to determine whether or not they constitute suitable equivalents. As an example of such definite requirements there follows a description of the curriculum of the extension trade teacher training program of the state of New York.[2]

	Clock-Hours
History, theory, principles and problems of vocational and prevocational education (elementary)	30
Trade analysis and organization of instruction	60
Applied psychology and education (elementary)	30
Types of vocational and prevocational education in New York State	30
Principles of teaching and class management	30
Practice teaching and observation (approved experience as a vocational teacher may be accepted in lieu of this requirement)	60
Organization and teaching of trade shopwork in unit trade, technical, part-time and evening schools	30
Organization and teaching of the industrial arts in high schools, general industrial schools and part-time schools	30
Vocational and educational guidance	30
Study of industries	30

[2] University of the State of New York, Bulletin 863, "Certification and Training of Vocational Teachers, Supervisors and Directors," 1926. P. 13.

ELECTIVE COURSES (FOUR 30-HOUR COURSES TO BE ELECTED)

Principles and problems of secondary education
Principles and problems of the junior high school
Trade mathematics
Trade science
Mechanical drawing (one course in machine, architectural or cabinet)
English
Public speaking
Industrial history
Hygiene and accident prevention
Industrial economics
Principles of education
Organization and teaching of the required or academic subjects in part-time schools
Organization and teaching of the related science, drawing and mathematics
Industrial arts design
Shopwork (one course)

The other school of thought maintains that it is best to have a very flexible standard so that the best available man may be selected for the instructor irrespective of whether or not he is able to meet all of such requirements as would ordinarily be set up for certification purposes. It may be seen that there are advantages as well as dangers in the latter plan. As long as the selecting official or agency is absolutely competent to determine what training and experience is best suited for any given teaching position, and as long as this agency is able to keep itself free from political and other pressure the latter plan may work very satisfactorily. But there is reason to believe that in other instances it would be better to make the requirements for certification a matter of record.

Definitizing Standards.—It can be said without fear of contradiction that lately there has been a general feeling that standards, including those for licensing vocational teachers, should be more definite than they were before 1925. For instance, a term like "satisfactory trade contact" is not definite at all. To say "one year of practical work in industry" is much more definite and yet permits interpretation.

Federal Policy.—The Federal Board for Vocational Education has ruled that federal funds may be used as reimbursement for salaries paid to vocational teachers provided the qualifications of the teachers meet the standard set forth in the approved state plan, even though such teachers have not been certified to teach.[3] In some states, however, public funds, either local or state, cannot be paid unless the teacher holds a legal license to teach the subjects actually taught. In view of the fact that federal money used to match state funds may be regarded, after it has been matched, as state money there can be no public aid of any kind where certification requirements are disregarded.

The Federal Board has felt that "the state laws governing the examination and licensing of teachers have not in every case been adapted properly for selecting and testing vocational teachers." The board suggests:

1. That experience along practical lines should be measured.
2. That mechanical skill and ability to use technical knowledge be tested.
3. That for certain positions special skill or knowledge be required rather than general ability.[4]

Determining Professional Requirements.—In the field of general education there has come into use an almost universal practice of basing certification on credentials from recognized educational institutions rather than upon examinations given by the licensing agency. Speaking from this standpoint, Burris has said: "The granting of teachers' certificates by methods other than those which lead through regularly organized training institutions is antediluvian."[5]

There is danger that in vocational certification we draw too heavily upon the precedents established in the field of general education. For instance, the teacher-training institutions,

[3] Federal Board for Vocational Education. Statement of Policies, Bulletin 1, 1922, p. 32.

[4] *Ibid.*, pp. 32-33.

[5] Burris, B. J. "The Problem of certification in relation to teacher training," in *Proceedings, N.E.A.*, 1926, p. 937.

though properly equipped to evaluate accomplishment in the field of general education, may or may not be adequately prepared to evaluate all kinds of practical experience and special or technical knowledge. In general the following methods are in use for determining fitness to teach in the trade and industrial field:

1. Certification through credentials of approved institutions or other approved credentials as, for instance, original statements from employers.
2. Certification based upon oral, written or performance examinations or combinations of two or of all of these.
3. Certification based upon credentials plus examinations.

There appears to be no reason why the evaluation of "subject matter," "technical" and professional training such as is given by approved industrial-teacher-training institutions should not be undertaken by these institutions. They are usually better equipped to do this than are state or municipal certification offices. If the teacher-training institutions, or other evaluating agencies for that matter, desire to do a careful job of evaluating trade experience a special procedure will need to be followed, as this is quite a different matter.

Determining Trade Abilities.—A number of municipalities, a few state departments of public instruction, a few teacher-training institutions and a handful of research workers have been experimenting and trying out various methods of determining the trade abilities of prospective trade teachers. The various methods used can be classified into four main types: (1) the method of inquiry involving statements from employers, foremen and others; (2) the method of examination by means of oral, written visual or performance tests; (3) advisory committees; and (4) through combinations of the preceding methods.

1. Inquiry.—It is believed that this method, in one form or another, is commonly used. Usually the candidate is required to file statements from former employers or others who have known him and who will vouch for his trade ability. This method is open to several weaknesses. In some instances the

candidate secured his training in foreign countries and it is impossible to secure records. In other instances employers and those who might vouch for the candidate have moved or have died. In still other cases the worker has moved around a great deal, changing jobs frequently so that great difficulty is encountered in getting written statements. In yet other instances the statements received are vague and practically useless. Thus one could continue to cite cases that prove that this method has a number of shortcomings. But in spite of all that it also has value and it seems reasonable to expect that statements of experience will always be desired as *partial* evidence of trade ability.

The experience of the New York State Department of Education during the last ten years in trying to determine the trade ability of candidates for the New York State industrial scholarships through the above-mentioned and other means appears to bear out the statement that this method, as well as other methods, has not proven entirely satisfactory.[6] Similar testimony is given by the Division of Vocational Education of the University of California, Southern Branch.[7] The facts can also easily be substantiated by certification officials.

2. Tests.—Oral, written and performance tests have been used for many years and they enjoy a limited use among the states and municipalities conducting industrial education. But scientific testing and measuring is recent as a phase of public school procedure and the development is in line with achieving greater validity through more scientific tests and measurements that actually measure what they pretend to measure.

Even though relatively crude and perhaps subjective in character as many oral and written tests now being given undoubtedly are, they constitute a worth-while addition to other methods of determining trade ability. Trade factual or information tests, such as the "Printing Trade Factual Test"

[6] Fink, Eugene D. "New York State Industrial Scholarship." A.V.A. News Bulletin, Vol. IV, No. 3, 1929, p. 37.

[7] Johnson, Benjamin W. "Determining Trade Ability of Craftsmen." A Circular issued by University of Los Angeles.

developed at State Teachers' College, Buffalo, New York, will quickly show whether or not the candidate has a working knowledge of his trade. The oral test will still further bring out the facts as to his training or it may be used to discover his range of interest, personality factors, adaptiveness, attitudes, etc.

The written test can be used to advantage to show the candidate's ability to handle the related subjects side of his trade. Such tests may involve reading plans, and making sketches, drawings, designs, etc.

The performance test aims to show the prospective teacher's ability to perform certain typical manipulative aspects of his trade. Quality of workmanship and speed are both taken into consideration. There are several limitations to the performance tests: (1) They are expensive to give, and (2) the time required necessitates testing in a limited field. It seems to be the general conclusion where performance tests are used that they are worth all they cost in terms of time, effort and funds. When it becomes known that a performance test is required a fair proportion—sometimes a third—of those who apply for the teaching position never show up for the test, thus weeding out at the start what in most cases would probably be the weakest, the least aggressive and the less desirable candidates.

Among the promising trade tests are those developed and in process of being developed by Walter B. Jones at the University of Pittsburgh. They include oral and written procedure, and performance tests for specific trades. Benjamin W. Johnson reports satisfaction with trade tests that have been developed recently under the auspices of the University of California, Southern Branch, for purposes of determining trade ability.

3. Advisory Committees.—In some cities the custom prevails of taking the recommendation of the trade advisory committee as to the trade ability of the prospective teacher. As a matter of fact the trade advisory committee often is either asked to suggest the prospective instructor to pass upon or choose between several candidates or to approve the choice made by the director of vocational education. Still another method is to ask the advisory committee to recommend several candi-

dates, any of which would be satisfactory, and then to have the selection made by the school authorities from those recommended.

A variation of this plan is to have the recommendation as to trade proficiency and general desirability come from an industrial group as, for instance, the local union or the employers' association.

4. Combinations.—Owing to the fact that not a single one of the preceding plans of determining trade ability is entirely satisfactory under all conditions, the thought naturally arises why not use several or all of these various methods. That is exactly what is being done. Since so many different elements enter into the problem of selecting the best available instructor it is felt that several plans or devices should be used to safeguard the interests of the learners.

Procedure in Testing.—One large city that has been using its present system of testing shop teachers for approximately ten years, and that has not found it necessary to modify materially the technique involved, uses the following methods:

1. Dates for examinations are scheduled in advance and descriptions are sent out indicating the nature of the positions to be filled, the trade, educational and other requirements that must be met, the salaries paid, the increments normally to be expected and the maximum salaries at present approved.

2. The candidate reports, usually upon a Saturday morning, at some designated school building. He is first given a written test of the multiple choice type, involving several hundred statements or questions dealing with trade facts, conditions or procedures which he merely checks for accuracy.

3. The next step is an oral examination. This is conducted around a conference table. Usually a supervisor of the special field, the head of the department concerned, a principal and a representative of the superintendent's office, together with the candidate, sit around the table. The purpose of the interview is primarily to evaluate the candidate's personal, social, moral and professional qualifications; to determine his major interests, attitudes and ideals as they bear directly or indirectly upon the profession he hopes to enter.

4. The candidate must also visit the doctor to check on the condition of his physical fitness. The written, oral and physical examinations take approximately from 9:00 a.m. to 11:30 a.m.

5. In the afternoon the candidate reports for the performance or job test, which is about two hours in length. The candidate does not necessarily have to complete the job assigned him—he is judged by the way he goes at his work and by what he accomplishes in the time specified. He works from blueprints, thus testing his ability to use the latter. The shop examinations are in charge of the special supervisors, heads of departments or perhaps some of the ablest teachers in the system. The examinations are made up by a special representative committee.

6. The rating given is based upon the composite of the various forms of the examination, each examiner rating the candidate separately. Numbers instead of names are employed and are different for the various parts of the examination so that there can arise no manipulation of results by the examiners even if they were inclined to do so. If the candidate holds a standard state license to teach or has had previous teaching experience that will be in his favor as would also trade and other experience, a certain amount of which is of course absolutely required as a minimum qualification. The actual amount of trade experience required of unit trade teachers is eight years.

Certification Procedure.—Although there are bound to be certain differences from state to state in the matter of certification procedures it is probable that they have much in common with the procedure as followed in Pennsylvania, that will now be described: Certification for all public school teachers is on a state basis, the certificates being issued through the Teacher Bureau of the State Department of Public Instruction. Any school district in the state may, if it so desires, establish standards higher than the minimum standards set up by the state. The procedure in securing a state teacher's license is briefly as follows:

1. The applicant secures through the state department,

through a superintendent or through a teacher-training institution a copy of the state certificate application form. On this he submits evidence of (a) moral character; (b) good health; (c) professional experience; (d) vocational experience; and (e) educational training received. The vocational experience is vouched for through original or certified copies of statements from former employers or others able to give the information; the professional training is certified to by the teacher-training institution concerned.

2. If the applicant is entitled to a license one is issued to him. The certificate indicates on its face the particular subjects that may be taught, and the basis, as for instance "vocational industrial" or "industrial arts," upon which they may be taught. Teachers cannot legally teach subjects not indicated on their certificates.

Certificates are issued directly to teachers or prospective teachers or through superintendents as desired. It is not necessary to be employed in teaching nor to have the conditional promise of a teaching position to be granted a certificate. It is only in the case of directors and teachers desiring the special evening school certificate that the application must come through the school authorities of the district or city wishing to employ such a director. In this respect the Pennsylvania regulations for teachers appear to differ from the procedure in the state of New York where the chief executive officer of the school, or of the school system, desiring to employ the applicant, requests that the certificate be issued.

Validating Certificates.—Certificates issued in one field may, by law, be made valid in other fields. For instance the school code may provide that holders of unit trade certificates or of other certificates valid in the full-time trade or industrial school may automatically become valid for the part-time continuation schools or classes or for evening trade extension schools or classes.

Certificates may also be made automatically valid in a related field upon the completion of certain additional training. For

instance a qualified teacher of general educational subjects may be entitled to teach the same subjects in a part-time continuation school after he has completed six, or some other number of semester-hours of professional education relating specifically to the continuation school.

Still another plan is to validate certain types of vocational certificates for a related type of instruction upon the recommendation of the local superintendent of schools—the purpose being to place the responsibility for such validation upon the local school official who, because of his intimate knowledge of the candidate, is best able to judge the propriety of such validation. To illustrate, teachers holding unit trade certificates may, upon the recommendation of the local superintendent, have such certificates validated for the same type of work to be taught upon an industrial arts basis—such validation to be restricted for use in the district where it was requested.

Minimum Essentials.—The matter of establishing minimum essentials in the way of professional requirements for trade and industrial teachers is not an easy one to dispose of when consideration is given on the one hand to *desirable* standards and on the other hand to *attainable* standards in terms of today. Vocational education and vocational-teacher-training have not been established long enough in our country on a national basis to make it possible to secure highly trained craftsmen in many occupations who have had, or who could readily get, what constitutes a relatively low professional requirement standard. There is given herewith a suggestion of what is believed to be fair starting point for the professional requirements for standard certification for full-time trade or industrial teachers.

It is readily admitted that there will arise instances when men of outstanding trade ability should be employed as teachers in trade or industrial schools or classes who do not have twelve semester-hours of training.[8] Some states handle that by issuing

[8] A semester-hour is taken to mean a one-hour recitation or class period involving two additional hours of study or preparation per week for a semester—usually sixteen to eighteen weeks.

MINIMUM PROFESSIONAL REQUIREMENTS FOR FULL-TIME TRADE AND INDUSTRIAL TEACHERS

	Semester-Hours
1. An introductory orientation and integrating course in trade and industrial education, with historical illuminations	2 to 4
2. Educational and vocational psychology	2 to 4
3. Special methods and teaching problems, differentiated according to need	2 to 4
4. Job analysis and development of instructional material for shop or related subjects	2 to 4
5. Social and economic insight course with historical illuminations	2 to 4
6. Observation and practice teaching including shop and class organization and management	2 to 6
Total	12 to 26

"emergency," "temporary," "partial" or "limited" licenses which are sub-standard. Sometimes they are not renewable without additional professional training, and sometimes less state aid is given when teachers hold such sub-standard licenses.

It is likewise readily granted that in addition to the six courses mentioned that there are others that would be very desirable to have. Though 12 semester-hours of professional training appears to be a fairly high minimum requirement for the teacher who comes by way of the trade route it is probably not high enough for those who graduate from two- or four-year industrial-teacher-training curriculums.

The California Requirements.—The vocational industrial-teacher-training curriculum required by the state of California includes eight subjects or units of two semester-hours each. The list is as follows:[9]

Evening School Instructors.—It is very evident that the professional requirements for evening school teachers will usu-

[9] University of California, Division of Vocational Education. "A circular of information for qualified persons from the trades and technical occupations who desire to become vocational teachers," 1928, p. 16.

	Semester-Hours	Clock-Hours
1.* Occupational analysis and curriculum construction	2	60
2. Technique of vocational instruction	2	30
3. Vocational guidance	2	30
4. Theory and administration of vocational education	2	30
5. Problems of trade technical instruction	2	60
6. Part-time, cooperative, and trade extension education	2	30
7. Civic and employment relations	2	30
8. Observation and directed teaching	2	30
Total	16	300

* A complete trade analysis is required before a diploma will be granted.

ally have to be lower than for full-time teachers. The state of New Jersey requires 360 hours of pre-employment teacher-training work; the state of New York requires 240 hours; Massachusetts 50 hours; and Pennsylvania 12 semester-hours for standard certification. In most or all of these states, these requirements are modified in some cases. A number of states employ evening school teachers without professional training. Sometimes these certificates may be renewed without professional training and in other instances the candidate "must take such additional training as may be prescribed." The latter indefinite phrase has been inserted as it is not yet well established what can be offered by the teacher-training agencies in all sections of a state, and neither are we absolutely certain as to what can be done in the matter of compulsory attendance upon such classes by those teaching evening trade extension classes or those contemplating doing so.

No doubt the standard for professional training for evening school teachers needs to be raised in some states; in others they appear to be high enough and the immediate problem is to

provide the means and methods of carrying out the provisions of the law.

It is not reasonable to expect all evening school instructors to attend class instruction to any great extent. Some can do that but others find it practically impossible unless the instruction is carried to them. Can this be done? In some states perhaps; in others it cannot. This raises the question of whether or not correspondence or home study professional courses would under certain conditions be accepted. If so, what shall be the conditions?

Evening School Standards.—Is it true that the establishment of evening school certification standards is of little importance because regardless of what standards are established for teachers' licenses the evening class will disband if the instructor fails to put over a good job? A certificate is not a guarantee that the holder thereof is a successful teacher. The certificate is merely evidence that the holder has met the conditions prescribed by law. These may or may not include such subjects as practice teaching. It is presumed that meeting the conditions of the certification requirements will help to make a good instructor, or to put it in another way, will help to protect the public from incompetent instructors. It is true that evening trade extension classes will not long countenance poor instruction, but is there not a serious loss in case of a failure of that sort? Therefore, must we not conclude that it is very important that competent instructors shall be secured and that there be in force and effect certification requirements that will help to keep out those that cannot give satisfactory evidence of whatever we hold to be the minimum essentials to such teaching?

Appropriate Requirements.—There may be a difference between high standards and appropriate or adequate standards for certification purposes. The mere fact that a certain number of clock-hours or semester-hours of training are required does not prove anything. It depends upon what is back of the requirements—are they really appropriate for their purpose? In discussing the matter of evening school certification the Federal

Board stresses the importance of selecting the best qualified persons that can be had in the trade or industry.[10] It points out the necessity of requirements sufficiently elastic to permit the best men to serve as teachers. "Evening classes seldom amount to very much where instructors of mediocre ability and only average skill are used." A consideration, therefore, of what constitutes appropriate certification standards must involve an analysis of what can be required of the outstanding men in the profession.

The Effect of Licensing.—Licenses are issued to plumbers, engineers, dentists, doctors and teachers as a means of protecting personal and public rights and welfare. In the professions the effect of granting licenses has uniformly served to raise the standards of those professions. By studying conditions as they now exist we can more intelligently and more wisely plan for the future; we can adopt sliding scales in accordance with which the professional standards five years from now may be distinctly higher than they are today. The trade teachers of the future will be picked from the men and women who will have a keener appreciation of the value of teaching, a stronger desire to teach, and a better background for teaching than many of those who are now so engaged.

Recognizing Equivalents.—Before state certification became effective it was frequently difficult for those certified in one county, district or municipality to secure recognition in other counties, districts or municipalities. To some extent that still is true as between one state and others. Certain restrictions should no doubt be set up, as for instance, that full-time teachers at least should be familiar with the school law and the state plan for vocational education in the state in which they wish to teach, but it must likewise be clear that it does not pay to set up what in effect would be a tariff barrier levied against skill, training and experience from other places.

To what extent should industrial experience and training be recognized as the equivalent of general education, vocational

[10] Federal Board for Vocational Education. Bulletin 17, March, 1929, pp. 44-45.

education, and professional requirements? One state in adjudicating certification requirements accepts evidence of the successful completion of a four-year apprenticeship as the equivalent of four years of high school, and two years of trade experience of journeyman grade as the equivalent, for industrial certification, of two years of post-high school training. Is that a reasonable evaluation of equivalents? May it be that such trade training should be accepted in the case of trade teachers but not in the case of those teaching the related subjects or of supervisors and directors of industrial education?

The subject of equivalents also comes up in the case of teaching experience. Should successful teaching experience be accepted in lieu of training taken "in course?" For instance a man has successfully taught mechanical drafting on a vocational or on a college basis for six years. Should he be given credit to the same extent as if he had been working over a drafting board in industry for the same length of time?

As was indicated in the preceding chapter, several teacher-training institutions—most of them not specifically mentioned by name—give a certain amount of credit toward the baccalaureate degree for practical trade or industrial experience. There are also other forms of experience, such as military training, that are recognized in a similar way. A number of state departments of education also grant certification credit on the basis, in part, of trade experience.

Within the last few years an interesting experiment was begun at the Colorado Agricultural and Mechanical College by H. A. Tieman.[11] A committee of which Professor Tieman was chairman has undertaken the task of trying to determine what college credit should be allowed for various forms of practical experience, as, for instance, for: (1) shop experience; (2) research work of a technical grade carried on in industry; (3) foremanship and executive work in industry; (4) teaching experience; and (5) for administrative experience in the educational field. Formulas were worked out on the basis of which

[11] For a detailed description see *A.V.A. News Bulletin,* Vol. IV, No. III, pp. 32-35. 1929.

the experiences just mentioned were translated into college credits. In general it is proposed to allow the following credits:

"1. Five credits for each year of successful trade or industrial experience.

2. Two credits for each year of successful teaching experience—maximum 10 credits.

3. Ten credits for each year of successful research experience in industry or public schools.

4. Ten credits for each year of supervisory experience in industry or supervisory experience in the public schools.

5. Twenty credits for enlisted World War experience."

The committee recommended that the plan should require additional college work; that it should be restricted to "those who are mechanic arts or trade and industrial teachers, or administrators in our public school system, who are doing outstanding work, and that the plan should not be operative for those who have merely had years of industrial experience."

Teachers of Related Subjects.—The certification requirements for full-time teachers of related subjects differ materially as a rule from those of shop teachers. The chief differences are that for teachers of related subjects less practical work in industry and more general and technical education are demanded. A number of states do not require industrial experience of teachers of related subjects. Some require one year. A few require more than that but allow equivalents as, for instance, the Ohio State Plan says, "Trade training—at least two years' industrial experience (graduation from a four-year approved technical college will be considered the equivalent of one year of industrial experience)."

The following certification requirements for teachers of related subjects, set forth by the state of New York are commendable:[12]

TEACHERS OF RELATED TECHNICAL SUBJECTS IN UNIT TRADE AND PART-TIME SCHOOLS

1. *General education.* Graduation from an approved four-year high school curriculum, and

[12] University of the State of New York. Bulletin 863. Nov. 1, 1926, p. 7.

2. *Special training or technical experience.* Satisfactory completion of the two-year day industrial-teacher-training curriculum as conducted at the New York State normal schools, or its equivalent; or

The satisfactory completion of two years of approved college work in engineering, science or architecture and the satisfactory completion of the required courses of the extension trade teacher-training curriculum as conducted by the State Department of Education, or its equivalent; or

Five years of approved technical or trade experience in the field or fields to be taught and the satisfactory completion of the required courses of the extension trade teacher-training curriculum as conducted by the State Department of Education, or its equivalent.

Supervisors and Directors.—When the National Vocational Education Act went into effect it was not possible to require, as a condition in granting a legal license, certain features that are now considered necessary. Now that the program of vocational education has been under way for more than a decade it is possible for states to require that all newly appointed directors and supervisors shall have had at least two years of successful teaching experience on a vocational industrial basis. Such a provision is broad enough to enable the future directors to come by way of two routes: (a) the shop teacher route and (b) the route taken by teachers of related subjects. It might be argued that one or the other of these is to be preferred, and no doubt there may be certain local situations where one type of background is to be preferred to the other for the director of vocational education. But by and large the best talent from both branches of vocational education service should be given the opportunity to supervise and direct industrial education.

Speaking a Common Language.—It is well known that lack of understanding is a hindrance to progress. This is particularly true when terms in common use in a trade or profession change their meaning or have different meanings attached to them from time to time, in order to meet the newer situations that arise. As progress is made in a profession such as education, which is in many respects only semi-scientific in its methods, techniques and procedures, old, obsolete terms are eliminated, others have new interpretations attached to them,

and still others are coined to meet the demand for greater exactness and accuracy of expression.

In the fields of trade and industrial education and of industrial arts education we already have an array of technical terminology that is staggering to the layman; we have so many different names for courses of study that they are confusing to parents, teachers of general subjects, and others who are not specialists in these branches of education. Many find it difficult, for example, to differentiate between industrial arts education and vocational industrial education. Others do not understand the relationships as well as the differences between industrial arts education and manual training, and still others who are familiar with modern trends in the use of technical terms are influenced by local usage or other factors to continue in the use of terms not generally accepted as being the best for the purpose for larger units of administration such as the state.

There are a number of reasons why clearness in understanding and a reasonable uniformity in the use of the names given to types of education and to courses of study will contribute to efficiency and progress. Among them may be mentioned: (1) advantage in simplifying certification of teachers; (2) reduced errors in reimbursing salaries from the state office; and (3) greater ease in understanding school records and reports. Each of these items will be briefly discussed.

Certification of Teachers.—When certification of teachers is carried out upon a local basis the types of certificates that are issued, in most instances, are relatively few in number. When, however, a state adopts a plan of certification uniform for the entire state, and inclusive of all of various subjects or types of instruction that are taught in the day, evening and part-time schools of that state, in elementary, secondary and special schools, and in the various branches of education, it can readily be appreciated that the list of subjects is likely to become cumbersome, and that persons who have any contact with, or responsibility for, issuing those certificates, renewing them and interpreting them when necessary, have no small job on their hands. It may therefore be laid down as a basic principle that it is

advantageous to issue no more different types of certificates than are absolutely required. In other words, the kinds of certificates issued and the subjects specified on them should be kept well within practical bounds.

Reimbursement.—If valid certification of teachers is a factor in the reimbursement received by a local school district from the state then it becomes the duty of the state to check upon the certificates held to see that teachers actually hold the valid licenses to teach the subjects that make up their program. Sometimes teachers are certified to teach certain subjects and are asked by their principals or superintendents to teach quite different ones. This may directly affect state reimbursement.

It is a long, exacting, and wearisome task to check annually the certificates of all the teachers in a state in order to safeguard the expenditure of state and federal funds paid as reimbursement upon teachers' salaries. From this standpoint, therefore, as well as from that of simplifying certification, it is desirable to keep the list of subjects used upon teachers' licenses as short as possible.

As a means of avoiding misunderstanding in the matter of reimbursements to school districts it would be helpful if the districts used the same terminology as the state officials. Thus, if industrial arts is the accepted term for a given type of instruction, it would lessen confusion if such terms as "manual training," "manual arts," "practical arts," and "mechanic arts" are not used in place of the term "industrial arts"; if industrial arts is not confused with vocational industrial education; if part-time general continuation education is not classified as part-time trade extension education, and if evening schools and classes are not confused with part-time schools and classes.

Records and Reports.—The third reason why there should be greater uniformity in the use of technical terms is that uniformity will make it easier to understand records and reports. It is realized that local usage and tradition are frequently strong factors, and that there are certain disadvantages as well as advantages in revising the names of courses or names for given

types of instruction. Is it not true, however, that a new name such as "radio" or "television" calls attention to that particular thing and causes people who do not know to ask "what is it?" That is exactly what is wanted—we want people to desire to know what is meant by such terms as "trade extension training" and "related subjects instruction" in order that they will understand how modern industrial education seeks to give essential service for vocational competence and citizenship.

Summary.—In the matter of licensing vocational teachers there is evidently a strong tendency to definitize the requirements and to raise the standards as quickly as conditions permit. No doubt we shall demand more five years from now in the way of professional requirements than are asked for today, for teaching like other professions is becoming more professional and scientific in spirit and in practice. The schools as well as industry are directly interested in shorter, practical ways of determining trade or industrial abilities. To this end trade tests and measurements will receive more attention in the years immediately ahead. There will also be closer cooperation between the schools and industry through coordinators and through functioning advisory committees.

Minimum certification requirements must be worked out with reference to specific trades or groups of closely related trades or occupations. They can be higher for full-time than for part-time and evening school teachers. Our greatest difficulty at this time is to determine what constitutes appropriate requirements for part-time and for evening trade and industrial teachers. What is proper in one state is not necessarily feasible in others where conditions are different.

In granting teachers' licenses as well as in evaluating training and experience for purposes of meeting degree requirements in teacher-training institutions the question of what equivalents should be allowed is of vital importance. It is but reasonable to conclude that, as standards become more clear-cut, and as means of measuring become more refined and accurate, such matters can be adjusted with greater equity than is now the case.

QUESTIONS AND PROBLEMS

1. Should certificates be issued only on request of local school authorities?

2. Discuss the merits of the policy of issuing life certificates after three years of successful teaching experience.

3. Under what conditions, if any, should a vocational certificate be validated in the same, or in a closely related subject in the field of industrial arts?

4. Discuss the advisability of specifying specific courses that will be accepted as meeting, on the professional side, the certification requirements.

5. Discuss the advisability of establishing minimum and maximum age limits for entering upon vocational teaching.

6. From what source or sources should supervisors and directors of vocational education be drawn?

7. Under what conditions, if any, should a successful director of industrial arts education be certified to supervise or direct vocational industrial education?

8. Under what conditions, if any, should a supervisor or director of vocational industrial education be certified to supervise industrial arts education?

9. Shall we take for granted that a supervisor or director of trade and industrial education is qualified to supervise or direct part-time general continuation education?

10. Discuss the merits of placing evening schools or classes under the direction of the man in charge of the day program in the same field.

11. What relationship, if any, is there between salary schedules for teachers and attainable professional standards?

12. How much professional training would you require of a teacher of: (1) fur cutting; (2) electric and gas welding; (3) window trimming; (4) cosmetology?

13. Should a director of industrial education be a high school graduate? Explain your answer.

14. Is it feasible to require summer school attendance of evening trade extension teachers? If not, why not?

15. On what basis would you justify the expenditure of public funds to carry teacher-training service to teachers in service?

16. Is teacher-training given in the form of campus courses more worthy of public support than extension courses? If so, why?

17. May it properly be said that teacher-training done by local directors or supervisors has more immediate application than that given under the auspices of teacher-training institutions?

18. How should the certification requirements for vocational teachers be determined?

19. In what cases, if any, is the certification of trade or industrial teachers a local problem in your state?

20. To what extent should trade or industrial experience be recognized as the equivalent of college credit toward a degree in industrial education?

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Note: See also various state school laws, state plans for vocational education and special circulars issued by state boards of vocational education on certification of vocational teachers, supervisors and directors.

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